*"For anyone who has ever contemplated assembling their own fly rod—this is* the *book. Scheck removes the mystery and makes it fun, not science."*

*—Ed Jaworowski, author of* The Cast *and* Troubleshooting the Cast

# FLY ROD BUILDING MADE EASY

A COMPLETE STEP-BY-STEP GUIDE TO MAKING A HIGH-QUALITY FLY ROD ON A BUDGET

ART SCHECK

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**ART SCHECK**

The Countryman Press
Woodstock, Vermont

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For Mom and Dad

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## PREFACE

My first very-own fly rod, an Orvis Full-flex fiberglass model, was under the tree on Christmas morning in 1969. Actually, what I found beneath the Christmas tree were the parts of a fly rod and a booklet of instructions. As I remember, it was a very good Christmas; the rod kit was accompanied by a Pflueger Medalist reel, which I still use, and a Gladding fly line, which long ago went to fishing-tackle heaven. (Now that I think about it, perhaps Gladding lines went to the other place.)

I built the rod in January on the kitchen table, gluing the handle to the blank with Elmerâs Glue, wrapping the guides in an approximately straight line, and finishing the wraps with several coats of the varnish that came in the kit. It was, in my eyes, a fly rod of unmatched beauty, even if most of the wraps had some gaps and lumps.

In February or March, my dad bought a kit for himself at Reed Tackle in New Jersey, choosing an astonishingly slow fiberglass blank (we called such things ânymph rodsâ in those days) and a bunch of those strange Aetna Foulproof guides unknown to most fly fishers under the age of 40. I wrapped that rod, too, and did a slightly better job, though it still hadnât occurred to me to measure the wraps so that both of them on each guide would end up the same length.

Iâd been tying flies, of a sort, for a few years, and after finishing Dadâs new rod I decorated and upholstered as many hooks as my stock of materials permitted. With our huge assortment of flies (dozens, in lots of colors, including a few found in nature) and our custom, handmade rods, Dad and I were more than ready for opening day. The fish were doomed. Resistance was futile. If the trout had any brains, theyâd just flop up on the bank so we could put them in our creels. Thatâs how I saw things, anyway.

But Dad was a realist, and we spent the first several weeks of the season roll-casting worms in the cold April water of a local brook. Those slow-action fiberglass sticks were just the ticket for bait fishing. We had no trouble rolling out 20 feet of line, even with an earthworm and a BB split shot on the tippet, and we cleaned up. We had trout for breakfast several weekends running.

In May, Dad drove us up to the Muscenetcong River outside Hackettstown, New Jersey, not far from the fish hatchery, and I caught my first trout on a fly with my new rod. It was a rainbow, probably no more than a month out of the hatchery, and it ate a small Mickey Finn bucktail. The trout was probably slightly less surprised than I was.

Iâve caught quite a few fish since then, in places more wild than Hackettstown and with more elegant flies and rods, but I havenât caught many that were more memorable than that little rainbow. In my young mind, I had arrived. A rod I made had cast a fly I tied, and a trout had eaten the fly.

In an ideal story, or at least in fishing-industry hyperbole, that yellow fiberglass rod and 10-inch hatchery trout would have ignited a lifelong passion for beautiful, high-performance fly rods, a passion that has taken the narrator around the world in the quest for trophy game fish and let him earn a handsome living as an angling author, fishing personality, and tackle-trade consultant. Real stories are never quite ideal. I scratch out a living editing and writing fishy stuff and, like most folks, go fishing when obligations permit, usually close to home. I have a strange assortment of rods, most of them homemade, quite a few of them quirky, and none as costly as the sticks you can find in a tony fly shop.

I have a lot of fun in my local fishing holes and with my homemade tackle. And that first fly rod did kindle a lifelong interest in rod building. Not that Iâve gone at it hammer and tong for the past 30-odd years; after those first two, I didnât build another rod until I was well into my 20s. Since then, Iâve built rods in spurts, making a bunch every few years. One guy needs only so many fishinâ poles, after all. But Iâve always found rod building intensely interesting and deeply satisfying, more so than even fly tying and lure making. The more Iâve learned about it, and the better my skills have become, the more interesting Iâve found it. When I went on a rod-building jag several years ago, it occurred to me that maybe what Iâd learned could help other anglers whoâd enjoy fishing with rods they had built. And so I started taking photos and making notes.

Although Iâve built a few fly rods for other anglers, I consider myself an amateurâa serious and enthusiastic

hobbyist, perhaps, but a hobbyist nonetheless. This is a book for amateurs, for an angler whoâd like to build his or her first fly rod, or who had problems with the first one and would like his second homemade rod to come out a little better.

Nowadays, finding good fly-rod components is easy. Most of the parts, though, donât come with detailed instructions, or any at all, and a lot of instructional materials are confusing, incomplete, or so all-encompassing as to intimidate a novice. What Iâve tried to provide is a manual for kitchen-table mechanics, a guide that will help you select parts and put them together. I donât have a rod shop full of equipment, and Iâve had to figure out how to get good results without spending a pile of money. Someday, maybe Iâll have a proper shop and top-of-the-line tools for wrapping and finishing rods. Maybe, if you fall in love with this craft, you will, too. In the meantime, we amateurs can get by on patience and ingenuity, and we can make fly rods that are at least as good as any we can buy.

Youâll note an emphasis on economy throughout this book, but thatâs mostly a reflection of the authorâs personality and life. I enjoy making things and saving a buck when I can. Although I love using a good rod, I donât belong to the fly-rod-as-jewelry school of thought. Do not, however, let my approach dissuade you from buying more elegant reel seats than most of those I use, or from purchasing any of the wrapping and finishing equipment you see in catalogs. Nickel-silver reel seats, slick wrapping setups, and motorized rod turners are well worth what they cost. But I get a kick out of doing things on the cheap. My grandfather used to joke that simply buying the right stuff at the hardware store would ruin oneâs amateur standing as a carpenter, plumber, mechanic, or whatever. He got a lot of fun out of devising his own solutions, and I guess I take after him.

While Iâm sure that Dad understood what it would mean to me to catch fish with a rod I had built, neither he nor my mother could have predicted where that fly-rod kit under the Christmas tree would lead, and where itâs still leading. But I will make a prediction. Your most memorable and rewarding fishing, the angling you will do with fly rods built by your own hands, lies in the future. I hope it comes soon.

Art Scheck
Manchester, Vermont
June 2001

# INTRODUCTION

## WHY BOTHER?

Any sensible person, and perhaps even a fly fisher, has to wonder why one would go to the trouble of building oneâs own fly rods. After all, dozens of companies produce thousands of good fly rods. You can pick up a serviceable model for under $100 or blow the rent on a high-end wonderstick. Every possible fly rod, from small-stream wands less than 6 feet long to 15-foot, two-handed salmon rods, from featherweight jobs for 1- or 2-weight lines to 15-weight weapons designed to jerk bluewater fish up to the transom, can be found in some fly shop or catalog if one but looks diligently enough.

So why would you want to build your own rod? For several reasons, it turns out.

First, you can save some dough. Even if you purchase a kit containing pretty much the same parts used by a manufacturer, and therefore attempt only to duplicate a fly rod you could buy, you can save a C-note. Rod building is a tedious, labor-intensive craft. When you supply the labor, you donât have to pay for it. If you lust after, say, a particular Sage or Thomas & Thomas rod, you can make a copy of the factory version for a lot less money than it would cost to buy the finished rod. You can save even more by using a less elegant (though just as sturdy) reel seat than that mounted on the factory rod.

You can also save money in a less obvious way, by starting with an inexpensiveâbut very goodâblank and fitting it with good components. Some of the blanks used for entry-level or low-priced rods cast very well; better, in some cases, than certain sticks used for expensive rods. But the manufacturer of a $90 factory rod must save money somewhere if he is to have any profit. He can save quite a bit by giving the rod a cheap, stamped reel seat, third-rate cork, and fewer, lower-quality guides, and then by having his workers assemble the thing as quickly as possible without fretting over every detail of fit and finish. We canât fault the manufacturer for taking that approach: If he wants to meet a certain price point, he has to cut corners. Itâs the same with shotguns or cars or suit jackets.

Good stuff costs more than less-good stuff.

But *you* donât have to cut corners. If you like its action, you can buy the blank used for an inexpensive fly rod, and then fit it with a good reel seat, nice cork, and the proper number of top-quality guides, all mounted with meticulous care. By the time youâre done you might have spent a little more than the price of the factory version, but youâll have an infinitely better fly rod, perhaps one thatâs fully equal to some $400 factory rods. Will it be as good as the highest-priced model from an upscale manufacturer? Maybe. It might be better, at least as a fishing tool that suits your requirements. Or it might be only 90 percent as good as an expensive rod from a tony fly shop, but at a price $200 or $250 lower.

I have a short, 5-weight rod I bought some years ago for about $60. Even at the time, it was a mighty cheap graphite rod. I like its action, and I cast very well with it. Iâve used it to catch hundreds of trout, bass, and panfish. It has withstood considerable abuse and neglect, and, by and large, has served me well enough.

It is not, however, a rod I shall mourn if I eventually break it. The guides, of which there is one too few, are at best adequate. The fat, full-Wells handle looks absurdly big on a short, light rod, doesnât fit my small hand very well, and is made of rough, pitted, bargain-basement cork. By the end of the rodâs second season, the top of the cheesy handle had come unstuck from the blank, necessitating a repair job. A reel wanders from side to side in the overly wide hoods of the stamped-aluminum reel seat, from which some of the finish has departed. The guide wraps are encased in thick, stiff, heavy blobs of epoxy, several of which have cracked next to the guide feet.

Nonetheless, my cheap little rod throws a mean line. For a bit less than I paid for that rod almost a decade ago, I can buy an identical blank. For about the cost of the blank, or a little more, I can purchase a nicely machined skeleton reel seat with an epoxy-impregnated walnut insert; a cigar-shaped grip made of clean, dense cork; a slick, sturdy, and slightly oversized stripping guide; eight hard-chromed, stainless-steel (and also slightly oversized) snake guides; an equally good tip-top; a winding check more handsome than the rubber O-ring used on

the factory rod; and a spool of rod-winding thread in whatever color strikes my fancy. Then, since I donât have to worry about meeting a price that will suit impoverished or skinflint anglers, I can spend some happy hours assembling my parts, producing a fly rod altogether superior to the one I bought years ago. It would cast and look better, and last longer. Altogether, the project would set me back maybe $100, at current retail prices, and Iâd have a first-class fly rod.

And I would have done just that, if my ever-changing tastes hadnât led me to build a different rod, a sweet little fiberglass toy for a 4-weight line. I built my fiberglass 4-weight partly to fish for trout in small streams, and partly to terrorize bluegills and pumpkinseeds. Its flexible, almost rubbery blank turns panfish and small trout into sea monsters. But its slick guides let my line shoot freely, allowing me easily to cast the bugs I enjoy throwing at bluegills. I reduced the diameter and altered the taper of a cigar-shaped grip so that it feels good in my hand. I like looking at the polished aluminum and American walnut of the reel seat, and I get a kick out of the old-fashioned (almost faux-bamboo) effect of tan wraps finished with six coats of spar varnish.

Itâs *my* rod, and thatâs the point. It fits the job I expect it to do, and it fits me. The latter is perhaps the greatest benefit of building your own fly rods. We humans, as youâve no doubt noticed, come in a great variety of sizes and shapes. As do folk who make automobiles or suit jackets, rod manufacturers have to play the averages. Maybe the stout, full-Wells grip on the new RocketRod 7-weight fits 80 percent of the anglers who might want the rod. But perhaps you have smaller-than-average hands with bony fingers, and a long, thick grip feels like a baseball bat. Buy the RocketRod blank and mount a slender, reversed half-Wells grip on it. Even if you duplicate every other aspect of the factory model, you will still have a rod that fits you better, and which you will enjoy more.

If you have hands the size of catcherâs mitts, then perhaps you should build all your rods, irrespective of length or line weight, with large handles. Some might look a little odd, but what do you care? Theyâll fit you, and youâll fish well with them.

Perhaps youâre a 5'1" gal who finds the stripping guides on

factory rods a little too far away for comfort. When you drop the line, as everyone does several times a day, you have to stretch to reach out and grab it. When you build a rod, arrange things so that the butt guide is a couple of inches closer to the handle than it is on a typical factory-made model.

Maybe you do most of your fishing in water thatâs full of silt or sand. Even microscopic grit on a fly line will eventually saw through ordinary snake guides. No problem: Rig your dirty-water rod with silicon-carbide strippers and titanium-nitride snake guides, both of which will outlast you.

You can do any of these things because building your own rods gives you no end of choices. This is true of even the most basic component, the blank. Finished fly rods are expensive inventory. By necessity, fly shops devote more dollars and space to popular rods than to oddball models. If you want a 9-foot 5-weight, the local fly shop probably has a bunch of rods to show you. If you hanker after a 6-footer for a 4-weight line, you might be out of luck. These days, long sticks are the fashion.

Blanks, though, are cheaper and easier to stock. Furthermore, most rod-building supply houses seem to take pride in carrying unusual sticks. Do you want a 5-foot, 9-inch 4-weight, or a fast-action 7Â½-foot rod for a 5-weight line? Youâll find the blanks in catalogs, though you might not find such rods at the local tackle emporium. And, since the rod-building outfit knows itâs going to sell you all the other components (and a rod bag and tube, too), itâs probably not hung up on peddling only the highest-priced blanks. That means youâll have access to some less costly blanks that a do-it-yourselfer can turn into exquisite rods, but which factories often bollix up with poor hardware.

Perhaps most important, youâll have heaps of fun building your own fly rods. Fun is the reason we fish, isnât it?

Rod building doesnât require any special talent, but it does require attention to detail and a lot of patience. In some ways, itâs like fly tying, but to the *n*th degree. A fly takes shape in 10 minutes. A graphite stick and a pile of parts become a fly rod over the course of 10 to 20 hours spread over six or eight evenings. If the parts fit together neatly and gracefully, itâs because you *made* them fit. Building a typical fly rod entails a

little engineering, a little woodworking, a little metalsmithing, deft handling of thread, careful mixing of epoxies, some delicate brushwork, and a lot of forethought.

You donât follow a pattern; the goal isnât to produce a replica of some other guyâs handiwork. Rather, you craft a fishing tool thatâs not exactly like any other in the world. When youâre done, you have a rod none of your buddies has, and a rod none of them can ever have. And, unlike a fly, it lasts for years, or maybe decades.

As anglers much wiser than I have noted, a fish caught on a fly you tied is somehow more truly caught than one taken on a fly from the store. The same is true of homemade rods. Iâd still love this sport if I used only store-bought equipment made by other people. But I think Iâd enjoy it less if I didnât have flies, rods, and leaders that came from my own hands.

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**e**nough sappy hymns to rugged individualism. It would be remiss of me to steer you into rod building without providing at least a dollop of reality.

Can you build a better fly rod than you can buy, as folk in the rod-parts trade claim? The answer, as with all things piscatorial, is unequivocal: It depends.

*Better* is a subjective term. If the standard of comparison is a cheap, department-store model made by betel-nut-chewing sweatshop laborers somewhere in the developing world, then yes, you can most certainly make a better fly rod. Even on your first attempt, and even if you get some things wrong, you will make a rod that performs, looks, and holds up better. You can hardly do otherwise, if only because you will start with better components and will not have to throw the thing together as quickly as you can.

If the standard is, say, a top-of-the-line model from one of the finer manufacturers or a limited-production builder, the question becomes harder to answer. *I* canât build a rod more handsome than some of those you can buy for $600. Maybe, if I invested in more and better equipment and had a better place to work, I could build one thatâs just as pretty. Part of wisdom, they say, is knowing oneâs limitations. Iâm a pretty good mechanic, but an artist I ainât. Maybe you can do better than a

team of craftsmen at a high-end rod company.

Can Iâor youâbuild a fly rod that works better than the best production rods? Objectively, no. But we can build rods that work better for *us*. I used to have an exquisite 6-footer for a 4-weight line, a rod built by a small company in New England. It would throw more line and whip bigger fish than anyone has a right to expect such a rod to do. It was a wondrously precise instrument for catching trout in narrow, tumbling streams, for which purpose it was built in the first place, but it also subdued a lot of big bluegills and even, to the horror of its maker, a few decent largemouths.

But the handle, though aesthetically perfect, was very short and barely thick enough for my skinny hand. I would have preferred a slightly longer grip. Were I to build a rod with an identical blank, Iâd omit the hook keeper, which I never use on a short rod. The gorgeous sliding-band wooden reel seat pleased the eye, but I hesitated to bang it around in a canoe; Iâd opt for a sturdier skeleton seat with a wood insert. And, since I often use tiny rods for such plebeian fun as panfish angling, Iâd probably give my version guides one size larger, and a stripping guide two sizes larger; the bigger guides would make it easier to shoot a popper when I double-haul vigorously enough to make a little rod bend all the way into the cork.

So I guess I could build a 6-foot, 4-weight rod that would work better for *me*, and someday I will. It might not be quite so pretty as the one I used to own, but then my total investment in rod-building tools is somewhere under $100, and that paltry expenditure has been spread over more than a decade. (That, incidentally, is one of the points of this book: to show you how to build good rods without having to spring for a lot of fancy equipment.)

Still, you should enter rod building with realistic expectations. Unquestionably, you can make a lovely, durable fly rod that casts well. But you cannot make a magic wand that will cure all your bad casting habits. If you throw horrific tailing loops with every rod you own, you need to spend some dough on casting lessons, not on another rod.

Do not expect to build a rod that defies the laws of physics. You cannot make a 3-weight that will throw 80 feet of line *and* still have enough give to protect a 7X tippet when a 22-inch

trout takes your fly; the two requirements are mutually exclusive. You need to learn how to get a lot closer to the trout. Nor can you create a smooth-casting 7-weight with enough backbone to beat a 150-pound tarpon into whimpering submission. You must build a 12-weight rod and then take up weight lifting. Life is full of compromises.

Even in an imperfect world, though, anyone with average dexterity and slightly above-average patience (if you fish, you probably have the latter) can build a fly rod thatâs pleasant to look at and a joy to use. It wonât merely be a good rod. It will be *your* good rod. And you will have enjoyed making it, while saving some money to boot.

Not a bad deal.

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**b**efore we get to the hands-on stuff, Iâd like to share my one absolute, irrevocable rule of rod building:

Donât hurry.

Youâve lived this long without your handmade marvel; you can last a little longer. Take your time fitting the reel seat to the blank. Donât try to taper-ream the handle with a few mighty strokes of a rat-tail file. Before you apply glue to *anything*, make sure that the parts fit perfectly. Check and measure everything several times. Donât slather on one thick coat of finish in an attempt to finish the job in one evening.

Keep the âDonât hurryâ rule in mind, and everything else in this book is just a series of tricks. This ainât rocket science or even auto mechanics; anyone can build a good fly rod. But if you ignore the rule and try to rush the job, youâll end up with a rod you will always know could have been better. Worse yet, you might end up with some very expensive tomato stakes.

Besides, it would be a shame not to savor the pleasures of craftsmanship, pleasures you can relive every time you use a fly rod that came from your hands.

# 1

# GETTING READY

Please give the entire book at least a cursory reading before you order components. Some of this stuffâreel seats and guides, for instanceâtakes a little thought. You donât want to discover that you ordered unsuitable parts or forgot a small but essential item. Your first pass through the book should help you buy everything you need. Then, when your components, glue, and finish show up, you can study each chapter in greater detail.

It might help to have a general idea of what youâre getting into, and some notion of the rod-making process. What follows will also steer you toward parts of this book that can answer specific questions.

## COMPONENTS, GLUES, AND FINISH

Choose the blank first. I canât offer much advice here, because materials and models change from year to year, and because picking a blank involves such personal factors as your taste in fly rods and your budget. When you select a blank, jot down the dimensions of the butt and tip. The diameter of the butt might help you decide which reel seat to order, and you need to know the tip size to order the right tip-top for the rod. Youâll find more information on blanks in chapter 2.

Selecting a reel seat and grip can confuse a beginner, because catalogs seem to offer so many choices. Functionally, though, many reel seats are identical. Start by determining which general type you wantâa skeleton seat with a hardwood insert, an all-metal seat, or whatever. Price alone might then eliminate some models of that type. After that, it really does become a question of what appeals to you.

All reel seats are not compatible with all handles. Maybe you want to combine an uplocking skeleton seat with a recessed handle that conceals the fixed hood. You need to make sure that the seat and grip will work together. When in doubt, you can fall back on the matched-component handle kits offered by most supply houses. Chapter 3 describes reel seats, handles, and other parts such as fighting butts and

winding checks, and shows you how to fit and mount the components on the bottom end of a fly rod.

The reel seat, handle, and related parts are glued in place with epoxy. Most rod builders find a thick, paste epoxy best for mounting reel seats. Rod Bond and PC-7 are good glues for reel-seat work. For the handle, butt cap, and winding check, you can generally use a thinner, faster-curing glue such as Devconâs 2-Ton Epoxy. Your catalogs describe appropriate glues, and you will find more information in chapter 3.

Next, select the guides. Decide which type you want, according to your budget and the job you expect the rod to do. Then determine the number and sizes of guides. Chapter 4 will help you pick guides, prepare them, and figure out where they go.

Thread is a no-brainer: nylon, size A. All you have to decide is which color you want.

These days, most rod builders use a two-part or epoxy finish on the wraps, which produces beautiful results and lasts almost forever. A beginner, however, might find a one-part finish such as Perma Gloss easier to apply and control. Youâll find descriptions of finishes and tips for using them in chapter 6.

Check your order carefully before sending it. Itâs no fun to open the package and discover that you forgot to order a stripping guide or epoxy for the reel seat.

**TOOLS AND EQUIPMENT**

Fly-rod building doesnât require much specialized equipment. The nifty tools, wrapping stands, finishing motors, and thread tensioners offered in catalogs make life easier, and theyâre worth every dime they cost. For years, though, Iâve made do with mostly homemade equipment and ad-hoc work areas, and my rods turn out pretty good. You can do the same, or you can order an instant rod shop from a catalog.

Whether you buy them or make them, you need stands to hold the rod blank while you wrap the guides and finish the wraps. Rod-building catalogs sell a variety of wrapping stands and work stations ranging in price from less than $30 up to several hundred. For $10 or less, you can build your own with 1-by-6 lumber, a handful of wood screws, and four small

mending plates. Youâll find descriptions and pictures of my homemade wrapping stands in chapter 5.

You also need something to keep the thread tight while you wrap the guides and ferrule. A big, hardcover book makes an adequate (and free) thread tensioner. Open the book, put the spool of thread in a soup bowl on the far side, pull the end of the thread across the book, and close the book on the thread. If you need more tension, stack more books on top of the one squeezing the thread. Some rod builders never use anything more complicated.

You will find a variety of thread-tension devices in catalogs. Some of them come as kits with rod-wrapping stands. Theyâre less clumsy to use than a stack of books, and they produce excellent results. A beginning rod builder or one on a budget can fabricate an excellent thread tensioner from scrap lumber and a few bits of hardware, as described in chapter 5. My homemade tension device wonât win any beauty prizes, but itâs a useful piece of equipment.

Epoxy wrapping finishes take a long time to cure, and they run and sag until they harden. That means you have to rotate a rod finished with epoxy until the goo becomes stiff. A low-speed motorized rod turner makes the job easier, but itâs not an essential piece of equipment. I donât have one. You can get excellent results without a rod-turning motor, as long as youâre willing to invest a little time. Chapter 6 will tell you how.

To enlarge the holes in rod handles, you need a pair of rat-tail files. One should have a tip that will fit inside a Â¼-inch hole, and the other should be the next size larger. Supply houses also sell tapered reamers covered with coarse grit. These tools speed up the job of fitting a handle to a blank, particularly a thick blank, and Iâm very happy to own a pair of them. But if youâre building only light-line rods for trout fishing, you can get by with rat-tail files. Chapter 3 shows how to open up the hole in a rod handle.

Guide feet typically need some work before you can wrap the guides on the rod. To dress guide feet, you need a small, fine, triangular machinistâs file, a small grinding wheel for an electric drill, or a medium-grit oilstone. I have all three, and I use one or more on each rod, according to how much work I

have to do on the guide feet. Chapter 4 describes how to dress the feet of guides.

Thatâs all the big stuff. If you build your wrapping stands and thread tensioner, you can get started for less than $30, even if you have to buy the files.

The rest of your tools and equipment make a short list:

- A roll of masking tape, for making reel-seat bushings and temporarily attaching guides to the blank.
- Small, sharp scissors, such as youâd use for fly tying.
- A package of double-edged razor blades or an X-Acto knife with spare blades.
- Sandpaper in 100-grit to 400-grit grades, and maybe a sheet of fine emery cloth or crocus cloth.
- Aluminum foil, on which to mix epoxy glue.
- A set of stainless-steel measuring spoons, in which to mix a two-part wrapping finish.
- Large paper clips, for mixing glue or finish.
- A bottle of rubbing alcohol, for cleaning parts and removing small smears of excess glue.
- A tool for burnishing wraps. A knitting needle works, or you can buy one of the inexpensive burnishers sold by supply houses.
- Paper towels and rags.
- Flat, natural-bristle artistâs brushes, for applying finish.

Thatâs it. You probably already have some of this stuff.

If you want to modify cork handles or fabricate fighting butts, as described in chapter 3, you need a variable-speed electric drill, a foot-long piece of Â¼-inch threaded rod (to serve as a mandrel for a grip), a Â¼-inch bolt at least 3 inches long (to serve as a gluing clamp for cork rings and a mandrel on which to shape them), nuts to fit the threaded rod or bolt, and several washers. You can get the iron-mongery items at any hardware store for a few bucks. This is optional equipment, but, as youâll see in chapter 3, it does let you customize handles and make your own fighting butts.

Finally, you need a place to work. Youâll want good light and a reasonably clean area. When itâs time to apply the wrapping finish, youâll want a room from which you can ban pets and children for a few hours. Any table at least 3 feet

wide can become a rod-building bench. If you use the dining room or kitchen table, as I often have, tape newspapers on it to protect the finish from your tools and anything you spill.

**HOW LONG DOES THIS TAKE?**

Itâs hard to predict how much time you will spend building a rod. A four-piece fly rod with 10 guides and a reel seat that requires assembly takes longer to build than a two-piece rod with 8 guides and a graphite seat. Some of us can fit and assemble small parts very quickly; other folks have little experience with tools, and must work slowly.

Iâve never clocked myself while building a rod, because I donât care how long it takes. Thatâs one of the nice parts of being a hobbyist. Iâd guess that I spend about eight hours on a typical 9-foot fly rod; maybe nine. Other guys get it done a little faster.

If youâre building your first fly rod, you can probably expect to put in 10 to 12 hours on the entire project. You donât build a rod in a single, 10-hour day; you spread the work over several evenings and maybe half of a Saturday. Sometimes, a component will set the pace. When you glue a reel seat to a blank with slow-curing paste epoxy, you want to give the glue time to cure before doing anything else with the butt section of the blank.

Even so, you still have a good deal of control over the pace of your work. Letâs say that youâre building a trout rod that will have a skeleton reel seat with a wood insert, and that your box of goodies arrives on a Monday. That evening, you can inspect the parts and assemble the reel seat, gluing the fixed hood and threaded barrel to the wood insert. If you have some ambition left, maybe you can do most of the work of fitting the handle to the blank, or perhaps you could begin dressing the guide feet.

The next evening, make the bushings for the reel seat and glue the seat to the blank. You want to leave the butt section alone until the epoxy gets stiff, but you can tackle other jobs. Maybe you could finish dressing the guide feet or glue the tip-top on the tip section. If youâre using a manufacturerâs guide-spacing table, you could measure and mark the locations of the guides on the tip section before knocking off for the night.

On Wednesday evening, finish fitting the handle, glue the grip to the blank, glue the butt cap onto the reel seat, and add the winding check to the top of the handle. So far, youâve spent maybe six hours on the project, spread over three evenings. Hardly a grueling pace.

When you wrap the guides, you can do as many or as few at a sitting as you like. Letâs say that you wrap the tip section on Thursday evening, spending two to three hours on the job. Give the wraps a coat of color preserver and let the tip section sit in your wrapping stands overnight.

Friday morning, get up 20 minutes early and apply a second coat of color preserver to the tip-section wraps. That evening, wrap the butt section. It will probably take an hour or less to do, because it has only two or three guides. Youâll be done early enough to give the wraps a coat of color preserver, wait an hour, and apply a second coat before bedtime.

Youâve ignored your family and household chores all week, so, to keep the peace, youâd better devote Saturday to domestic stuff. Put the pieces of your rod in the plastic sleeve the blank came in, and let them sit in a safe spot until Sunday afternoon. Mow the lawn, clean the gutters, go yell at the umpire at your kidâs baseball game, and take your wife to a movie.

On Sunday, you can apply the final finish to the wraps. If youâre using a mixed finish, set aside four hours. Sequester yourself in a quiet room, mix the finish, and apply it to the wraps. For an hour or hour and a half after applying the goo, youâll need to rotate the rod half a turn every 10 to 15 minutes. Great. Watch a ball game on TV, read a book, catch up on some paperwork. Once the finish has become sufficiently stiff that it no longer wants to run and sag (chapter 6 tells you how to determine this), leave the room and forbid anyone else to enter it until the next morning. Youâre done.

The point is that rod building can and should be a leisurely process for us amateurs. You canât do the whole job in one sitting, so donât try. Plan your work and break the process into convenient chunks. You donât have to apply epoxy finish to all the wraps on the same day; you might find it easier to coat half the wraps one day, and the other half the next. To save a little time, you can make the reel-seat bushings, slide the seat

into place without any glue, fit the handle to the blank, and then mount both the reel seat and grip with a single batch of epoxy. Or you can tackle those components one at time. You can wrap all the guides in an afternoon, or do two a night. While youâre waiting for glue to cure on one component, you can prepare other partsâor not. With a two-part finish, be sure to set aside a sufficient chunk of time; once you start, you canât walk away until the finish says you can.

Figure on a 12-hour process spread over a week, and your rod should come together with very little wear and tear on your nerves. In fact, you might enjoy the work so much that you canât wait to order the next batch of components.

## A ROD-BUILDING CHECKLIST

### COMPONENTS

- ☐ Blank
- ☐ Reel seat
- ☐ Butt cap or plate (if not included with seat)
- ☐ Bushings for reel seat (if applicable; you can often make them with masking tape)
- ☐ Grip
- ☐ Fighting butt (if necessary)
- ☐ Winding check (optional)
- ☐ Epoxy glue(s) for reel seat, handle, and related parts
- ☐ Hook keeper (optional)
- ☐ Tip-top
- ☐ Running guides
- ☐ Stripping guide(s)
- ☐ Thread
- ☐ Color preserver (optional)
- ☐ Finish
- ☐ Brush cleaner (pure acetone will work with most finishes)
- ☐ Cork sealant (optional)
- ☐ Rod bag and case

### TOOLS AND EQUIPMENT

- ☐ Rat-tail files
- ☐ Tapered reamers (optional, but often helpful)
- ☐ Masking tape (Â¾ inch, give or take a little)
- ☐ Ruler
- ☐ Tape measure
- ☐ Sandpaper in grades from 100 to 400 grit
- ☐ Fine emery cloth or crocus cloth
- ☐ A fine, triangular file
- ☐ A small grinding wheel for an electric drill (optional)
- ☐ Razor blades or X-Acto knife

- ☐ Fly-tying scissors
- ☐ Burnishing tool
- ☐ Wrapping stands
- ☐ Thread-tension device (or a couple of big books)
- ☐ Stainless-steel measuring spoons
- ☐ Large paper clips
- ☐ Flat, natural-bristle, Â¼-inch brushes
- ☐ Low-speed rod turner (optional)
- ☐ Rubbing alcohol
- ☐ Rags and paper towels
- ☐ Variable-speed electric drill (optional)
- ☐ Threaded rod, washers, and nuts (optional)
- ☐ 3- to 4-inch, Â¼-by-20 bolt with nuts and washers (optional)
- ☐ Wood glue or flexible cement (optional)

# 2

# BLANKS

## WHICH STICK?

Iâd be crazy to attempt to answer that question for you. Iâm happy when I answer it correctly for myself. Which I donât always do, by the way; no rod builder gets it right every time.

After a good deal of reflection, Iâve concluded that I have nothing profound to say about materials, actions, or brands. I cast better and have more fun with some rods than with others. So do you. In the end, you like what you like, and I like what I like. Two equally skillful anglers might have similar opinions of a lot of rods, or some, or none.

Graphite fishing rods arrived on the scene in the 1970s. The materialâvery thin carbonized fibers held together by a synthetic resinâhas a number of industrial uses, particularly in the aerospace business. Like most of the stuff anglers use, rod materials are by-products of larger industries.

The combination of fibers and resin used for the first graphite rods is called first-generation graphite. Itâs still around (more or less), but newer varieties of material have been introduced since graphite was first adopted and adapted by rod manufacurers, and so we have second-, third-, and fourth-generation graphite blanks, often designated by trade names that donât say much about the makeup of a stick.

Generally, each generation of graphite and resin has allowed manufacturers to build rods that weigh a little less than their predecessors weighed, not so much because the stuff itself is dramatically lighter, but because less material can be used to achieve the same degree of stiffness in a rod blank. Compared to the earliest carbonized-fiber rods, contemporary graphite blanks not only weigh less but also recoverâstraighten, that isâmore quickly and forcefully. Subject a 1970s rod and one of this yearâs models to the same loadâ40 feet of airborne fly line, sayâand then remove the load, as you do when you stop at the end of a casting stroke, and the newer blank will straighten with more zip. (Probably; there are no absolutes in rod making.) Improvements in resins

and in manufacturing processes have also helped rod companies to produce blanks that are less likely to break under extreme loads. (Generally; see âabsolutes,â above.)

Just as the tackle trade borrows materials from other industries, it also borrows terminology. The term *modulus* comes from physics. According to one of my dictionaries, it refers to the response of a material to mechanical stress or some other stimulus. Great; thatâs as clear as mud.

Among fishing-rod makers, *modulus* is shorthand for âmodulus of elasticity,â or, to put it crudely, a numerical description of a materialâs resistance to stretching. For a rod blank to bend, some of the fibers must stretch. The fibersâ desire to return to their original lengths is what makes the rod straighten when you remove the load.

In the angling tradeâs marketing copy, *modulus* has become a catchall term referring to the characteristics of carbonized-fiber rod material. A rod made of high-modulus stuff probably bends less deeply under load and straightens more rapidly when the load is removed than does one made of low-modulus material. And the high-modulus stick most likely weighs less than the lower-modulus rod, though in many cases the weight difference is a small fraction of an ounce.

*High* and *low,* of course, donât mean much. Everyone says that his rods are made of high-modulus graphite because it sounds sexy and powerful. One company can call its 39-million-modulus blanks âhigh modulus,â while another reserves the term for 57-million-modulus material. Engineers and scientists might have standards, but advertisers donât.

Besides, none of this modulus stuff predetermines how much you will enjoy using a rod or how well you will cast with it. A dozen blank designers might agree that a particular material can be turned into splendid fly rods, but they will not all agree on *how* the stuff should be used. Design matters at least as much as material, and blanks made of similar or even identical materials donât always feel and act alike. That brings us to the topic of action.

Under a normal casting load, a fast-action blank does most of its bending out near the tip, in the upper one-fourth (or even less) of its length. Subjected to the same load, a slow-action rod bends throughout most or all of its length. As youâd

expect, a medium- or moderate-action blank falls somewhere between the two, bending down to roughly the middle of the stick. Most of the graphite rods Iâve used have had actions ranging from very fast to medium fast, though manufacturers have begun making more medium-action blanks over the last few years.

Such descriptions, however, tell only part of the story. You canât equate fast action with a fast line, or slow action with a slow line, or either with distance or accuracy. Some of my fiberglass rods have extremely fast actionsâthey do most of their bending out toward their tipsâbut they donât move lines with any great speed. Some years ago, I had a chance to play with an antique bamboo rod that had an amazingly slow action; even the handle seemed to flex when I cast. I could throw more 5-weight line with that ultraslow cane rod than I could with most of the graphite rods Iâve owned. Like most fly fishers, Iâve owned a few nominally high-performance rods with which I could not fish well at any distance, and Iâve used some department-store junk that made me look like a champion caster.

A fine muddle, eh? If thereâs any universal correlation between rod material and angling pleasure, or between rod action and the number of fish you catch, or between material and action, Iâve yet to observe it. Fly rods are like shotguns, automobiles, and people: You get along better with some than with others.

When distance is the main criterion, though, most anglers seem to do best with fairly stiff, high-modulus, fast-action rods. A stiff, fast rod is usually the best choice when you anticipate having to make long casts in a hurry, as you might when fishing for tarpon or bonefish. The same rod will probably make it easier to punch a cast through the wind. A fast action generally helps when you need to make very accurate casts. On the other hand, many anglers prefer medium- to slow-action rods for slinging weighted flies, or for repetitive casting.

Conventional wisdom holds that a rod with a stiff butt and a fast tip is best for wrestling with big, strong fish. A slower, softer rod is generally reckoned best when you need to protect a fragile tippet. In any case, though, the fish-fighting skills of

the angler matter more than the style of rod heâs using. I know a chap in the Keys who has boated 120-pound tarpon in 20 minutes with an 8-weight rod; he knows how to whip big fish.

As you shop for blanks, think about *fishing*, and not just casting. Casting, as Terry Mort points out in *The Reasonable Art of Fly Fishing*, is a means to an end. It can be a very pleasurable means, and certainly casting is a vitally important skill, but it is only part of fishing. Itâs easy for a rod builder to become obsessed with building the ultimate casting implement, a description that generally means the rod that will let him throw the longest line. To some anglers, distance casting might matter more than any other aspect of fishing. But most of us need versatile rods. I once had a hot-rod 5-weight with which I could sling an astonishing (to me, anyway) length of line. But I rarely used that rod for trout fishing. It didnât roll-cast well, and it wasnât a comfortable rod for short- to medium-range casts. It was not the rod I wanted in my hand when I underestimated the strength of a trout Iâd hooked on a frail tippet. Besides, the thing was just plain tiring to use, at least with the line the maker recommended. And so my high-performance 5-weight spent a lot of time in the closet until I sold it. I do most of my trout fishing with softer, theoretically inferior rods. But those sticks are better *fishing* rodsâfor me, that is.

Most fishermen, Iâm convinced, worry too much about rod materials and actions, and too little about casting skills. A typical day involves making several types of casts at various distances with a variety of flies. The rod you like best for one task might not be the one you prefer for another job. But a good caster can make almost any rod handle a lot of jobs; a poor or inflexible caster can bring a boatload of rods and still never have the right one.

Itâs hard to study descriptions in catalogs and *know* which blank will suit you best. If you donât already know that you want a particular model, then the best you can do is to make a more or less educated guess. Quite often, you can use rods you already own as guides. If you have and love 4-, 5-, and 6-weight rods from the same manufacturer, a 7-weight blank from the same family will probably suit you. If you donât like one or more of the rods you own, try to figure out why. Is the

offending stick too soft? Too stiff? Does it work well enough with 30 feet of line, but then collapse with a whimper when you try to throw a fly 60 feet? Or is it a line cannon that barely flexes at normal casting distances, forcing you to work up a sweat when all you want to do is hit a target 40 feet away? If you can identify what you donât like, you can narrow the field of candidates.

Do not automatically shy away from moderately priced and even inexpensive blanks. Most of them make fine fly rods. Some of the difference, and in some cases a lot of the difference, between an expensive factory-made rod and an entry-level model lies in hardware. A rod manufacturer marks up the cost of that hardware in his wholesale price, and it gets marked up again at the retail shop. A $10 difference at the manufacturing level can become $40 or more on a retail price tag.

For my own fishing, I would never hesitate to buy an economical graphite blank, such as one of St. Croixâs SCII models. For a beginner, a less costly blank provides a way to make a lovely fly rod and learn rod building for relatively little money. If you want to expand your rod collection as inexpensively as possible, start with economical blanks, and fit them with simple, sturdy aluminum or graphite reel seats and good guides. For maybe $100 a pop, you can build fly rods that will surprise you with their performance. I have.

What do you get for your money if you spring for a more expensive blank? A nicer finish, most of the time. A greater likelihood that the blank will be perfectly straight, and that its ferrule will fit perfectly. Higher-modulus graphite, in most cases, and therefore somewhat higher line speed and slightly less weight. Greater consistency from blank to blank; two nominally identical cheap blanks can behave quite differently. A better warranty. Superior durability, sometimes. Cachet.

Does that mean you will *like* a $300 blank better than one that costs a fourth as much? I canât answer that question; you have to. Remember the prime directive of rod building: Donât hurry. Read catalogs and ask questions.

And remember to have realistic expectations. If you want to know which tapered tube of carbonized fibers and plastic resin will magically turn you into a peerless caster and angler, I can

answer the question with complete confidence. None will.

**TRAVEL-ROD BLANKS**

These days, most manufacturers offer rods made in three, four, five, six, and even seven pieces. The point is convenience when you travel, particularly on airplanes. Generally, you canât carry a two-piece fly rod onto an airliner, and fly rods sometimes disappear or get busted when entrusted to baggage handlers. A five- or six-piece rod can travel in your carry-on bag, along with reels and fly boxes. If your checked baggage ends up in the Northwest Territories as youâre flying to Florida, you might have to wear the same clothes for a couple of days. But at least you can fish. In the big picture, fishing tackle always trumps clean underwear.

If youâve never used any of them, you will be pleasantly surprised by the newer multipiece rods. Thanks to improved materials and manufacturing technology, and a lot of design work prompted by increased demand, modern travel rods cast remarkably well. I really canât tell the difference between most three-piece rods and their two-piece counterparts.

With rods made in four or more sections, most of us can feel a difference. Itâs virtually impossible for a ferrule not to create at least a small âflat spotâ in a rod blank, and a rod with three or more ferrules probably wonât flex like one with a single ferrule. It will probably feel somewhat stiffer and less crisp than its two-piece counterpart. It might weigh a little more.

But thatâs hardly the point. The ideal rod blank, after all, is made in one piece. Thatâs swell if you never, ever have to transport the rod, but very few fishermen live within strolling distance of good water.

The important thing is that contemporary travel rods cast and fish very well. A three-piece model stows easily in the trunk of a subcompact car, it *might* qualify as carry-on luggage (but donât count on it), and itâs probably less likely than a two-piece rod to disappear in the bowels of an airport, simply because the shorter case is easier for baggage handlers to deal with. A four-, five-, or six-piece rod can go on the airplane with you. You know that you will have it when you reach your destination. The real choice isnât between the feel of a two-

piece rod and the action of a five-piece job; itâs between carrying your fly rod and handing it off to strangers.

Iâd suggest, then, that you donât get obsessive about whether a particular travel blank flexes and casts and feels *exactly* like its two-piece counterpart. If you travel a lot, stop worrying about ferrules; buy a multipiece blank. It will perform plenty well enough. If you donât travel much by plane, but do need to store rods in a small vehicle or in a locker on a boat, a three- or even four-piece rod can make life easier.

For a do-it-yourselfer, the main drawback of a travel-rod blank is that all those ferrules complicate the job of placing the guides. You have to make some compromises and do a little extra figuring. But the difficulty is not insurmountable. Weâll tackle guide placement later, in chapter 4.

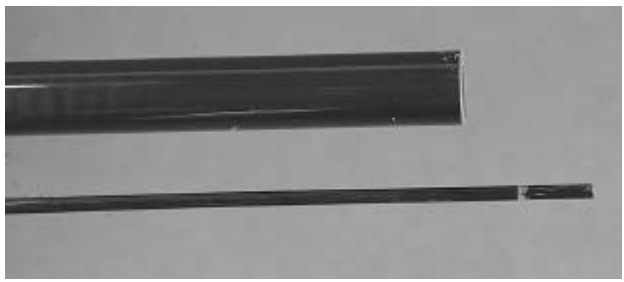
**SPECIFICATIONS TO NOTE**

I once heard of a first-time rod builder who measured a blank he had ordered and then pitched a fit because his 9-foot blank actually measured 8 feet, $11\frac{7}{8}$ inches. Irate, he called the company from which heâd purchased the stick and demanded instant replacement of the âdefectiveâ blank. Iâm glad I donât have to fish with guys like that.

Donât get rattled if a blank is a tiny bit shorter or longer than its nominal length. Many are. Itâs like buying a â17-footâ canoe: If you put a tape measure on the boat, youâd probably learn that itâs not precisely 204 inches long. While finishing this book, I bought an 8-foot blank that taped at almost 97 inches. I shrugged and built the rod. So far, the trout havenât figured out that the blank is too long by nearly an inch.

Besides the length and weight of a blank, a catalog entry usually lists another couple of specifications you need to know. The first is the butt diameter, usually designated by a decimal measurement: .385, .420, or whatever. Knowing this measurement helps you select a reel seat. If youâre contemplating a 9-weight blank with a butt diameter of .455 (455 thousandths of an inch), you donât want to purchase a wood-insert reel seat with an inside diameter of .375. Better to pick a graphite or metal reel seat with an inside diameter greater than .455.

Or, if you have your eye on an ultralight blank with a butt diameter of .290, you donât want a metal reel seat with an inside diameter of .560. Mounting that seat on that blank would entail making very thick shims and using a lot of glue, both of which would add a good deal of undesirable weight. In this case, you want a skeleton seat with a wood insert that has the smallest possible inside diameter, or a cork slip-ring reel seat.



**When you order a blank, note the diameters of the tip and butt. The former specification lets you order the right tip-top; the latter can influence your choice of reel seat.**

The other important specification is the tip diameter, which you must know to purchase the correct tip-top for the blank. In this country, rod-blank tips are measured in sixty-fourths of an inch. A blank with a tip size of 5, therefore, needs a tip-top with an inside diameter of $^{5}/_{64}$ inch. If a blank has a size 5.5 tip, it measures five and a half sixty-fourths at the tip, or $^{11}/_{128}$. Rod-building catalogs, however, designate the measurement as 5.5, and you will order a size 5.5 tip-top.

The size of a tip-top, then, refers to the inside diameter of the tube that fits over the end of the blank, and not to the width of the ring through which the line passes. Sometimes, youâll find both specifications; you might see that you can get a size 5 tip-top with either a size 7 ring or a size 10 ring. The ring diameter is expressed in millimeters, adding another layer of confusion to the whole business. A blank with a butt

diameter of .395 (a decimal inch measurement) might require a tip-top with a tube measuring 5/64 of an inch (a fractional inch measurement), which can be had with either a 7-millimeter or 10-millimeter ring (a metric measurement).

Things get even stranger, as weâll see in later chapters. Indeed, rod building is at least as arcane a craft as fly tying. By the time youâre done with your first rod, youâll be comfortable with reel seats with inside diameters of .420, tip-tops measured in both sixty-fourths of an inch and millimeters, snake guides designated by numbers, stripping guides measured in millimeters, and size A rod-winding thread. When you catch a big fish with your handmade rod, tell your friends that it was 23.75 inches long and weighed 2.3 and a half kilograms; your chums who build rods will understand perfectly.

**WARRANTIES**

Most blanks have one, but some donât. Among blanks with warranties, the terms range from one-year coverage of outright defects to unconditional lifetime warranties against breakage for any reason, including stupidity on the part of the owner.

A blankâs warranty or lack thereof will probably figure in your buying decision. A long-term, unconditional warranty provides considerable peace of mind to an angler who has dropped a few hundred dollars on a blank. Warranties arenât free, of course. A manufacturer who offers unconditional lifetime replacement of broken rods has to build the cost of such coverage into his pricing. Some fraction of the price of your $300 blank goes toward the cost of replacing the blanks that other guys slam in the tailgates of station wagons. But thatâs true of most things in life.

What about blanks with, say, one-year limited warranties or no warranty at all? Personally, Iâm not afraid of them. But Iâm pretty careful around doors and ceiling fans, and I try not to indulge in heroics on the water.

Purveyors of inexpensive blanks will cover outright defects in materials or construction. None of them wants a customer to go away angry. Itâs been my experience that the tackle trade is populated by good folk who stand behind their products and want you and your buddies to buy more of them.

Your blankâs warranty, incidentally, covers only the blank. If you fit your lifetime-warranty blank with $60 worth of fancy guides, the most expensive cork you can find, an exquisite $100 reel seat made of nickel silver and exotic wood, a nickel-silver winding check, and a sterling hook keeper, and then shove the tip into a ceiling fan in a gin mill while enthralling the locals with a fish story, the manufacturer will give you a new stick. All the hardware, not to mention the hours you devoted to building the rod, is your loss. Veteran rod makers have a technical term for this phenomenon: tough luck (or, depending on the company, stronger words).

Take care of your handmade rod. What makes it special is, after all, irreplaceable.

## FERRULES, AND THE WRAPPING THEREOF

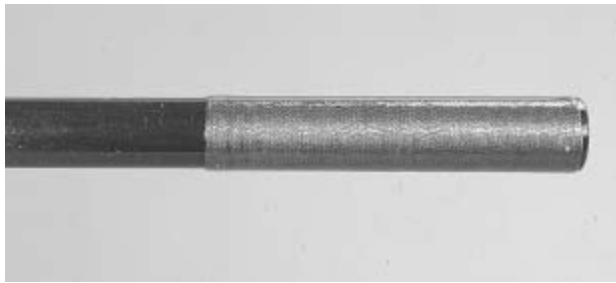
Youâre only human. When your new blank arrives, your first impulse will be to join the sections and start whipping the thing back and forth. Teenage boys play air guitar; anglers of all ages play air casting.

Resist the impulse. Do *not* join the sections and then flex, load, bend, or otherwise stress a new blank. You must never flex any blank until the female ferruleâor ferrules, in the case of a travel rodâhas been wrapped with thread and the wrap has received at least one coat of finish.

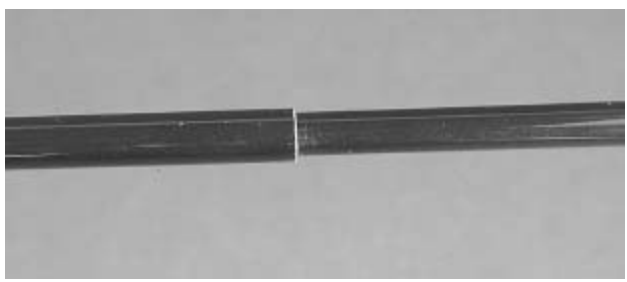
An unwrapped female ferrule can crack when you flex the blank. The blank might shatter as you gleefully whip it around, or, worse yet, the ferrule might develop a subtle crack you overlook as you build your new rod. Later, the crack will grow, until finally the blank breaks. A good-natured manufacturer with a generous warranty policy might replace the blank (even though the break is entirely your fault), but youâre still out the cost of all the hardware. And, of course, all your painstaking labor will have been wasted.

Wrap at least an inch of a female ferrule. I generally play it safe and wrap most or all of the insertion length; that is, if the male part goes into the female part for a distance of 2 inches, then I wrap 2 inches of the female ferrule. Some experts will point out that my long ferrule wraps add a little weight and a

little stiffness to a blank. Theyâre right. But I point out that Iâve never broken a rod.



**Never put any strain on a blank until you have wrapped the female ferrule (or ferrules, on a multipiece rod).**



**Although you shouldnât put any load on an unwrapped ferrule, you can assemble the sections of a rod to check the ferruleâs fit. Tiny misfits can often be corrected. If the fit is off by more than a tiny bit, exchange the blank for another.**

Iâll deal with the specifics of wrapping in a later chapter. For now, just remember not to put any strain on your blank until the female ferrule has been wrapped.

Thatâs not to say you canât assemble your new blank. You

should, if only to make sure that the ferrule fits properly. Join the sections gently, with slightly less force than youâd apply to a finished rod. Then, *ever* so gently, wiggle the rod just a little. You shouldnât feel the ferrule wobble or knock.

Many ferrules, particularly those on inexpensive blanks, fit less than perfectly. A minor misfitâand I mean less than a hairâs breadthâcan sometimes be corrected or even ignored. Ferrules wear over time, and a tiny imperfection will often âwear in.â Iâve ignored a few technically defective ferrules and have suffered no mishaps as a result. The only one of my rods that regularly casts off its tip section has a ferrule that seems to fit perfectly. Go figure.

Still, one likes things to be perfect. Generally, an imperfect fit is caused by one of two problems. The tip of the male part can bind inside the female half, allowing the open end of the female ferrule to wiggle. You can solve this problem by carefully, gently sanding the tip of the male part with very fine emery cloth or crocus cloth (*not* with ordinary sandpaper). The point is to remove a tiny amount of the finish on the male part, allowing it to penetrate the female half just a little more deeply.

The other sort of misfit happens when the bottom end of the female part binds on the male half, allowing the tip of the latter to wobble around inside the rod. In this case, roll up a small piece of crocus cloth and gently sand the first Â¼ to Â½ inch of the inside of the female part. Work slowly and carefully, checking the fit often and wiping both parts of the ferrule clean before you join the sections. Weâre talking about removing perhaps 1/1000 inch.

If a ferrule fits really badlyâif you feel a distinct knocking when you give the rod a feeble wiggleâsend the blank back. Such obvious defects are covered by warranty, or at least by good business sense. As you might expect, ferrules that donât fit properly seem more common on less expensive blanks than on high-priced models.

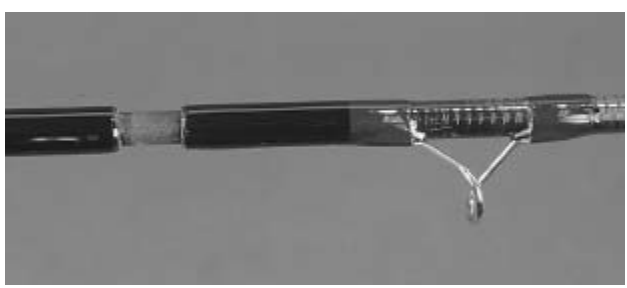
Modern fly rods have two types of ferrules. The more common sort is generally known as a tip-over-butt ferrule: The hole in the bottom of the tip section fits over the upper end of the butt section. This arrangement is also called a self-ferrule or sleeve ferrule.

The other type is called a spigot, plug, or internal ferrule. This sort employs a tapered, internal plug of graphite that protrudes from the end of the butt section and fits inside the tip section. The plug is added after the blank is manufactured.

Anglers love to argue about which system is better. Proponents of the spigot or internal ferrule say that it has less effect on action than does a tip-over-butt ferrule. Baloney, say those who disagreeâall ferrules affect rod action.

After making a lot of casts with rods with both types of ferrules, I have decided that I canât tell which is better. If you have strong feelings one way or the other, then get a blank with the type of ferrule you like. Who am I to argue with another manâs ferrule preference? But if, like most anglers, you donât adore one style and loathe the other, then I suggest that you donât worry about ferrules. If you like a rod and cast well with it, then itâs a good rod for you.

Plug ferrules, by the way, are supposed to leave a short gap between rod sections; you should be able to see some of the plug when the pieces are joined. This leaves a little room for wear. Donât ever try to force an internal ferrule together so tightly that the rod sections touch each other. Something will bust, or the ferrule will become permanently stuck.



**Plug or spigot ferrules are supposed to fit like this, with some space between the rod pieces. Never try to force the sections all the way together.**

**FINDING THE SPINE**

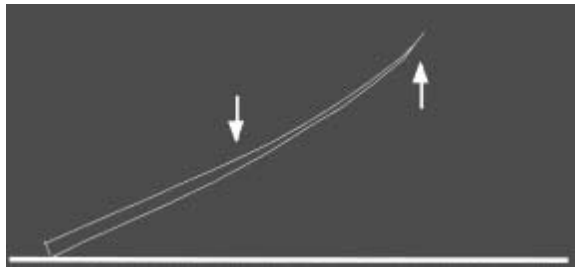
Unlike politicians, most rod blanks have spines. That is, each section of a blank bends most easily in one direction, and least easily in another (generally the opposite) direction. This phenomenon is a result of the way most blanks are manufactured, and has nothing to do with quality, strength, durability, or casting power. Cheap blanks have spines, and so do expensive blanks.

You can demonstrate the spine very easily. Hold the tip section of your blank at a 45-degree angle with the fat end resting on a table and the thin end cradled in the palm of your left hand. With your right hand, press down on the middle of the piece enough to make it deflect a couple of inches. Now, while maintaining pressure on the middle of the section, slowly roll the piece across the table. You will feel a âhigh spot,â a point at which the blank bends less easily than it does at any other point. That high spot is the spine.

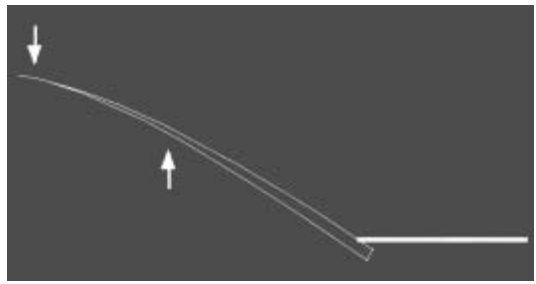
Wrap a piece of masking tape around the middle of the section. Uncap a felt-tip marker. Repeat your experiment, rolling the section of blank back and forth until you have identified which side is stifferâuntil, that is, you have determined the location of the spine. Mark the masking tape to record the location of the spine. Repeat the operation with the butt section of your blank. With a three- or four-piece blank, find and mark the spine of each section.

When you build your rod, put the guides on the same side as the spine. If you have a two-piece blank, mount the tip-top so that it is aligned with the spine mark on the tip section. When you mount the reel seat on the butt section, make sure that the fixed hood is aligned with the spine mark. Once you have one component on each section of a rod, you can remove your masking-tape rings, since you must align the rest of the parts with those you installed first.

You can find the spine another way. Put the fat end of a rod section under the edge of a table, desk, or workbench. Place one palm above the skinny end of the piece, and with your other hand push *up* on the middle of the piece. The section will roll, and the stiff sideâthe spineâwill end up on top. Mark the spine on a ring of masking tape, and put the guides on the same side as the mark. I generally use both methods, just to make sure that I do indeed find the spine.



**Finding the spine of a blank. Put the butt of the rod section on a table, and cradle the tip in the palm of one hand. With your other hand, press down on the middle of the section enough to make it bend an inch or two. As you slowly roll the rod section across the table, you will feel a âhigh spotâ or point at which the blank most resists bending. That high spotâthe stiffer side of the sectionâis the spine. Put the guides on the same side as the spine.**



**Another way to find the spine. Put the butt of the rod section under the edge of a table. Push up on the middle of the section with one palm, while pushing on the tip with the palm of your other hand. The blank will automatically rotate until the spine, or stiffer side, is on top. Itâs a good idea to use both methods to locate the spine.**

What difference does the spine make? Contrary to the beliefs of some anglers, a fly rodâs spine has very little or no influence on casting power. Itâs actually more important for

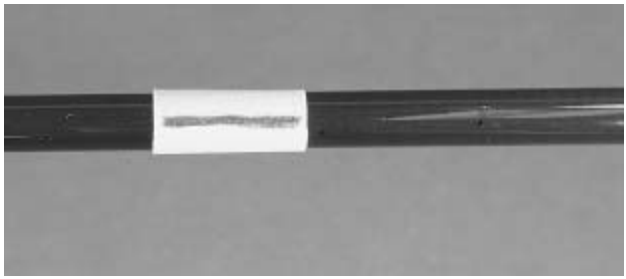
builders of spinning and plug-casting rods to find a blankâs spine than it is for fly-rod builders to do so. But the spine can affect accuracy. Letâs repeat our experiment, but a little differently, and weâll see how.

As you did a moment ago, hold the tip section at an angle with the thick end on the table and the skinny end cradled in your left palm. Push down on the middle a little harder than you did the first time, and roll the rod section back and forth a little. Let it roll however it wants to roll. The piece will automatically rotate until the stiffer sideâthe spineâis on the bottom, away from the load youâre putting on it. Now roll the piece until the spine is on top; until, that is, you feel the âhigh spot.â If you donât hold the section there, it will naturally snap back into the spine-down position.

When you bend a blank, it wants to twist until the spine is facing away from the load. If you put the guides opposite the spine, clear on the other side of the blank, the rod might want to twist a little on the forward cast, because the spine always wants to face away from the load. If you put the guides in the worst possible placeâat right angles to the spineâthe blank will almost certainly try to twist as you cast. And, as the rod tries to twist on the forward cast, the tip might wander off to one side rather than track in a straight line. Your casting stroke might be perfectly straight, but the tip of the rod would follow a curved path. It doesnât have to deflect much to spoil your aim.

And so we put the guides on the spine. That way, we donât have any twisting on the presentation cast.

To some extent, Iâm making a mountain of a molehill. I suspect that the tips of most fly rods deflect very little regardless of the relative orientation of the spine and guides. But âspiningâ the blank is one of those little touches that takes but a minute for you to do, requires no tools, and helps you to get the best possible performance from your new rod. Always find the spine of a blank and align the guides with it.



**Mark the location of the spine on a band of masking tape wrapped on the blank. The guides go on the same side as the spine mark.**

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The degree of spine varies from blank to blank. Some blanks have very pronounced spines; others have barely detectable spines. I havenât noticed that the degree of spine has anything to do with how much I enjoy using a rod.

**HOW STRAIGHT IS STRAIGHT ENOUGH?**

Sooner or later, as you do your preassembly tinkering, you will sight down each section of your blank to see if itâs straight. Chances are about even that you will be surprised, if not appalled, to see that one section (probably the tip) is less than perfectly straight. If you could strip the guides and wraps off all your factory-made rods, so as to get an unobstructed view of each of their sections, youâd find that many of them have slightly curved tips, too.

Frankly, a perfectly straight blank always strikes me as a pleasant surprise. Take a gander at the tiny hole in the end of your blankâs tip section. Thatâs the diameter of the end of the steel mandrel on which the blank was made. A piece of steel that skinny is pretty flexible. How even the most skilled craftsmen manage to make perfectly straight blanks is a mystery to me.

Naturally, you expect your stick to be straight. You paid good money for it, and the thing should be right. Generally, the likelihood of getting a crooked blank decreases as the price increases. Part of the price of a top-notch rod blank reflects the

cost of the slightly imperfect specimens that a manufacturer with high standards refuses to bring to market. A company that has a slightly broader defintion of acceptable tolerances (howâs that for putting it delicately?) can sell its products for a little less. Which isnât to say that every expensive blank is perfect, or that most modestly priced blanks are crooked. Manufacturers do their best to keep bad blanks from reaching consumers, but everyone goofs now and then.

If you get a blank with a pronounced curve in any section, ask for a replacement. Whatâs a âpronounced curveâ? Itâs hard to say, since the answer depends on the length of the blank. If you rotate the tip section of a 9-foot blank and see that the end wobbles an inch to each side, you have a problem. If you see a wobble of, say, Â¼ inch over a 4Â½-foot tip section, go ahead and build your rod; that imperfection will make no difference in the field. Thatâs been my experience, anyway. But a Â¼-inch curve in the bottom section of a four-piece blank will put the tip of the assembled rod way out of line. (Incidentally, three- and four-piece rods typically have nice straight sections; shorter mandrels must be easier to work with.)

Perhaps I have broader tolerances than most rod builders, but I donât get all worked up over a littleâand I do mean a littleâcrookedness in a blank, particularly if the curve is in the same plane as the blankâs spine. If, however, I were to find the spine and then see that the section curved way off to either side of the spine, Iâd be inclined to return the stick and ask for another one.

Be sure to check the straightness of a blank right above the ferrule, or above each ferrule of a travel rod. A slight bend at a ferrule can move the tip of the rod pretty far out of line. The blank will try to twist as you cast, and youâll have a hard time throwing a straight line. Furthermore, the twisting will make the ferrule work loose as you fish. If you get a blank with a bend right above the ferrule, ask for a replacement.

**MODIFYING BLANKS**

In general, a beginner shouldnât. Iâve modified a number of inexpensive blanks by shortening them, and Iâve been happy with the results, but I suspect Iâm more daring (or reckless)

than many rod builders. And I do, after all, have a little experience with this stuff.

If you havenât found a blank you like, you havenât looked hard enough. Itâs tempting to think that you can buy a blank, trim a little from one end or both ends, and produce an improved instrument that will turn you into Supercaster, the mighty angler who strikes fear into the hearts of game fish.

The odds that you can achieve your dream by cutting a blank are very, very slim. Almost zero, in fact. Until you acquire a lot of experience with a lot of rods, modifying a blank is like shooting with your eyes closed.

When you apply a saw to a rod, you enter terra incognita. As a rule, shortening a blank makes it stiffer. How much stiffer? Who knows? Cutting a blank also changes its action, or the way the rod bends under a casting load. Predicting how drastically the action will change is impossible for a beginner. If you trim an inch off each end of a graphite rodâan inch off the tip, and an inch off the bottom of the butt sectionâyou will probably end up with a very slightly stiffer blank that retains very nearly all of its original action. Note the abundance of qualifiers in that sentence, and be afraid.

I have cut a few fiberglass blanks, but they were exceptional cases. I wanted to make three soft rods for short- to medium-range fishing. My requirements were odd, and I didnât have dozens of blanks from which to choose or any money to spare. The sticks I purchased were almost what I wanted, but not exactly; their tips seemed too soft. And so I got out the razor saw, crossed my fingers, and shortened the blanks.

The story has a happy ending: I like all my truncated rods. Note, though, that I was dealing with inexpensive blanks, and that I had explored all my options. Furthermore, fiberglass is fairly safe to cut, since itâs far less likely to splinter than a graphite blank is.

Iâve yet to modify a graphite fly-rod blank; Iâd rather keep shopping than start sawing. If, like most anglers, you want to build a graphite fly rod, shop until you find a blank you like just the way it comes from the factory. Leave the surgery to professional builders of custom rods and to nuts like me who have eccentric tastes. And remember that modifying a blank

with a saw instantly voids its warranty.

**HOUSE-LABEL BLANKS**

Full-service supply houses such as Dale Clemens Custom Tackle, Jannâs Netcraft, and Anglerâs Workshop offer their own lines of house-label blanks. You probably donât know anyone who owns a rod made with such a blank, youâll never read a review of such blanks in a magazine, and youâll never see a detailed ad describing house-label blanks. Should you take a chance and buy one?

I would, for several reasons. Rod-building supply houses do not manufacture their own blanks. Most private-label blanks are made by several big-time manufacturers, not by children laboring in some Third World sweatshop. As a rule, you can count on their quality. I have a number of rods made with private-label blanks, and I like them all.

House-label blanks come in lengths and weights you might not find elsewhere. These days, most of the well-known manufacturers make shorter rods only for ultralight lines; youâre hard-pressed to find a 7- or 7Â½-foot rod for a 5-weight line in most rod companiesâ catalogs. Several supply houses list such blanks in their catalogs. If you like shorter rods, as I do, youâll find a number of choices among private-label blanks.

Name-brand manufacturers spend a ton of dough on advertising, and that expense has to be added to the cost of their products. You will never see a full-page color ad for house-label blanks. You pay for only the product, not the cost of marketing it, since the marketing effort is feeble compared to those of name-brand labels.

People in the rod-building business have a passion for the work. They try hard to offer the best, they stand behind what they sell, and they take an interest in meeting the needs of individuals. And they care very much about their reputations and repeat business. I wouldnât worry about the quality or durability of house-brand blanks from an outfit such as Dale Clemens or Anglerâs Workshop. Whether such blanks meet your needs or tastes is, of course, something for you to find out.

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but thatâs true of all blanks. Iâll end this chapter with a gentle suggestion. Donât turn shopping for a blank into a desperate, lifelong quest for Truth and Beauty. For the most part, distance and accuracy come from your casting hand, not from the stick in its grip. Yes, there are differences among blanks; thereâs probably a big difference between a $60 blank and one that costs five times as much. But donât sit up nights fretting that you might have overlooked the one miraculous, perfect blank that will solve all your problems and make all your angling wishes come true. Science has yet to invent the fishing rod with which I cannot occasionally cast poorly. If youâre an honest angler, you can say the same. Decide how much you can spend, choose a blank with reasonable care, and then get on with your life.

Besides, you can turn that blank into a better fly rodâfor *you*, that isâthan any factory can. Letâs see how.

# 3

# REEL SEATS AND HANDLES

If youâre baffled or intimidated by reel seats and grips, let me welcome you to a big club. Studying a finished rod provides few clues, if any, about how the thing was so neatly assembled.

But there is a logic to how handles and reel seats are affixed to blanks. Once you understand a few principles, you need only to apply them (with painstaking craftsmanship) to build handsome, sturdy fly rods. You donât need fancy, expensive equipment; I donât have any. You probably already own some of the tools the job requires, and you can pick up most of the rest at a well-stocked hardware store.

Letâs start by taking a general look at reel seats, handles, and a few other parts. Then weâll work through four examples of different arrangements. By the end of the chapter, youâll understand what it means to think like a rod builderâand youâll be ready to figure out how to deal with any reel seat and grip.

You can think of a typical reel seat as a hunk of pipe with a few modifications and accessories that let it hold a fly reel. A fixed hood (called a retainer by some companies) occupies one end of the pipe and holds one end of the reel foot. The other end of the pipe is threaded. Turning a nut up the threads pushes the sliding hood over the other end of the reel foot, clamping the reel to the rod. Some seats have a second nut that jams against the first, locking it in place so it canât work loose.

Those are just the most basic elements. Reel seats vary enormously in materials, design, workmanship, appearance, and price. If function is your only concern, you can spend under $10 and get a reel seat that will outlast you. If you want to make a statement of taste or wealth, you can easily find a reel seat that will set you back well over $100. As much as they vary, however, most fly-reel seats fit into one of four categories.

## GRAPHITE REEL SEATS

Iâm a big fan of the graphite reel seats made by Fuji and Pacific Bay. Theyâre light, durable, strong, and inexpensive. Their graphite-filled bodies and stainless-steel hoods will never corrode, and the nylon liners inside the hoods grip reel feet firmly while preventing electrolysis between the steel hoods and aluminum reel feet. The nut and sliding hood of a graphite seat ride in a keyway, which means you donât have to align anything to mount your reel; just drop one end of the foot into the fixed hood and crank the sliding hood home. You can mount one of these seats with the fixed hood at the bottom (downlocking, in rod-building parlance) or at the top, next to the grip (uplocking). Fuji and Pacific Bay even manufacture graphite bushings that simplify the job of mounting one of their seats on a slender rod blank, and which also make for a strong, lightweight bond between blank and seat.

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**Light, sturdy, inexpensive, easy to mount and use, and impervious to salt water, Fuji and other graphite reel seats work well on nearly all fly rods.**

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For strength, durability, light weight, low cost, and ease of installation, you canât beat a good graphite reel seat. Itâs plenty tough enough for saltwater angling, practically indestructible, and light enough to use on a trout rod. It will hold any fly reel securely, without any side-to-side wobbling. A top-quality graphite seat costs less than a mediocre metal reel seat, but will work as well and last as long as an expensive machined-aluminum job. I can imagine only a very few rods on which I wouldnât use one of Fujiâs Deluxe graphite seats or

a Pacific Bay graphite seat with lined hoods.

If youâre looking to save weight, a graphite reel seat will do it. While finishing this chapter, I built an 8-weight saltwater rod with a Fuji reel seat and graphite bushings rather than the full-metal component used on the factory version. According to a digital scale, my rod weighs 3.7 ounces; the factory publishes a weight of 4.4 ounces for its rod. Seven-tenths of an ounce is a lot on any fly rod. Most of the weight reduction came from that graphite reel seat, though some came from making short guide wraps and avoiding excess finish.

So why arenât these paragons standard equipment on top-end rods? Maybe because they lack cachet. Some anglers object to the untraditional looks of a graphite reel seat. Itâs somewhat wider than a typical fly-rod reel seat, particularly at the end with the fixed hood. A graphite seatâs matte-finish, high-tech look doesnât hint that your chestnut-paneled den contains shelves of rare, first-edition angling books and equally precious bottles of single-malt Scotch.

But I rather like the looks of Fuji and Pacific Bay graphite reel seats, at least on most rods. I might not use one on a short, ultralight rod, on which it would look clunky (even though it weighs less than most other seats Iâd use), and Iâd hesitate before gluing a dark gray graphite seat on an expensive and exceptionally pretty brown or green blank, though I might eventually do it. Aesthetic considerations aside, I wouldnât hesitate to use a graphite seat on any freshwater or saltwater rod. If youâre trying to save money, a graphite seat is the way to go.

Graphite seats come in sizes to fit everything from ultralight spinning rods to offshore trolling rods. For most fly rods, use size 16 graphite seats; the size refers to the inside diameter, 16 millimeters. On a tarpon or billfish rod, you might want a size 18 seat. If your rod will not have a fighting butt, make sure that you also get the hard-rubber plug for the bottom end of the seat. Some catalog companies include the plug with the reel seat; others sell it separately.

### ALL-METAL REEL SEATS

Metal seats range from stamped-aluminum models that cost a few bucks up to titanium components that can set you back

well over $100. Avoid super-cheap seats: Their finishes donât last, their crude threads wear out, their loose-fitting nuts jam, and their flimsy hoods split. For just a few dollars more, you can have a good-looking aluminum seat with sturdy hoods, locking nuts, and reasonably well-made threads. Iâve used these economical aluminum seats (Clemens Custom Tackle calls them Custom Builder seats) on several rods. Typically, an inexpensive metal seat has fairly large hoods that might allow a slender reel foot to wobble a bit from side to side. Thatâs about the only drawback of this type of reel seat, and itâs easily overcome by padding the reel foot with a strip or two of electrical or duct tape. If you want to save a few bucks on a trout or bass rod, you can safely do so by fitting it with an inexpensive aluminum seat. (Or a graphite seat, which weighs less and will probably work better.)

Next up the scale are machined-aluminum seats, used on most saltwater rods. Some of these are quite reasonably priced; you can pick up a rugged specimen for under $20. Higher-priced models have finishes more resistant to saltwater corrosion, and they probably have locking nuts. Most machined-aluminum seats have rugged, nicely made threads, nuts, and hoods. Some have milled slots that help keep a reel from shifting from side to side when you fight a big fish. Most can be fitted with fighting butts (about which more anon). If you want to build a saltwater, salmon, or steelhead rod, you wonât go wrong with a machined, all-aluminum reel seat. Such a piece of hardware also works nicely on a bass rod. As you might expect, the more expensive models display finer workmanship and are generally made of better alloys with sturdier finishes. The hoods on a top-quality machined seat grip both ends of the reel foot firmly without your having to crank down the locking nut with all your strength.

The Struble U7 is a good example of a reasonably priced, bulletproof, all-metal reel seat for a saltwater fly rod. Itâs a heavy-duty, corrosion-resistant component with locking nuts. Most mail-order houses also offer their own lines of machined reel seats. By and large, these private-label seats are made by one of the better component manufacturers (Pacific Bay, for instance, does a lot of private-label work), and you can buy one with confidence.

**These aluminum reel seats from Clemens Custom Tackle can furnish an anatomy lesson. From left to right on each, we have the butt cap or plug, the fixed hood (so called because it cannot move), the barrel, the sliding or movable hood, and a pair of nuts on the threaded portion of the barrel.**

If you want to build a showpiece saltwater rod, you might want to consider a titanium reel seat. These are among the most expensive seats you can buy, but theyâre light, extremely sturdy, and impervious to salt water. Of course, you might regret the extra expense (which is considerable) if you were to break the rod on a big tarpon or a billfish. Unless youâre out to impress your friends, youâll be just as happy with a well-made aluminum reel seat on your saltwater rodâor with a graphite seat.

**SKELETON SEATS**

A skeleton seat uses the ends of a tubular metal seatâthe fixed hood, threaded portion of the barrel, sliding hood, and nutâbut fills the space between the fixed hood and threaded barrel with a wood insert. This insert also fills most (sometimes all) of the space between the metal parts and the blank, since it typically has a fairly narrow hole through its center; most wood inserts have inside diameters of from less than $^{3}/_{8}$ to about $^{7}/_{16}$ of an inch. That narrow hole makes it relatively easy to mount a skeleton seat on a thin blank. Some manufacturers offer inserts in several sizes; if you have a choice, get an insert with an

inside diameter as close as possible to the butt diameter of the rod blank.

Most better factory-made freshwater rods have skeleton-and-insert reel seats. They look classy as all get-out, like a miniature version of a beautifully figured walnut stock on a fine shotgun. The wood barrel adds one more aesthetic component to a rod: If you wish, you can use guide wraps or trim bands that complement the wood. Most reel-seat companies offer a variety of woods ranging from walnut to various exotic timbers, and even some dyed woods.

**Skeleton reel seats are standard equipment on most trout rods. The upper, downlocking model came from Clemens Custom Tackle. Below it is an uplocking, Pacific Bay seat with a recessed handle. Although very reasonably priced, both components have nicely machined hardware.**

You can use a skeleton reel seat on nearly any freshwater graphite fly rod. Some models are suitable for light to medium saltwater rods. On a heavy saltwater stick with a thick butt, you might have a hard time fitting the wood insert to the fat blank. You can fit a skeleton seat to a heavier blank by enlarging the hole in the insert, but after reaming out an insert to fit a 10- or 11-weight blank, youâd be left with a thin shell of wood that might split after a year or two. A graphite or all-

metal seat is much easier to mount on a thick blank.

Nowadays, most of the better manufacturersâ wood inserts are impregnated with some sort of synthetic resin. The resin makes the wood weatherproof and keeps it from shrinking, swelling, warping, or splitting. A friend in the trade tells me that this resin-impregnated wood was developed to make dishwasher-safe handles on steak knives and was later adopted by the rod-building business. I have some steak knives that have survived many trips through the dishwasher.

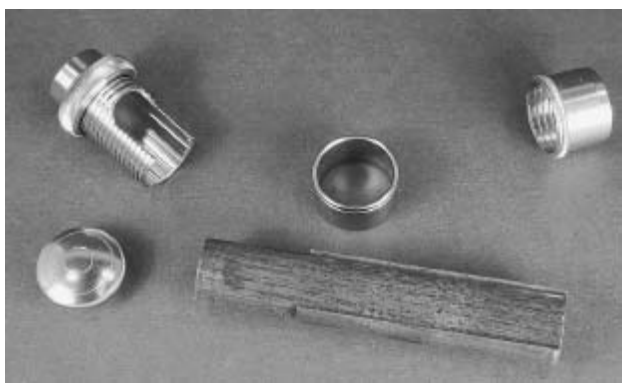
Skeleton seats run the gamut from those with economical aluminum fittings to stunning, beautifully machined and polished nickel-silver models. According to my current catalogs, I can spend about $20 for the least expensive skeleton seat and impregnated insert or about $150 for one made of nickel silver and fancy wood. On most rods, Iâd go with a middle-of-the-road seat with machined-aluminum hardwareâa Struble, Bellinger, REC, or Clemens component that costs between $30 and $60. If I were building a fancy rod, perhaps Iâd spring for a nickel-silver job with an exotic insert. Nickel silver does wear and age more gracefully than aluminum, developing a handsome patina over time, and many rod builders regard a nickel-silver skeleton seat as standard equipment on any fine trout rod.

One of the obvious differences between a $20 skeleton seat and one that costs $40 or $50 lies in the material, workmanship, and finish of the wood insert. Functionally, though, the wood is the least important difference. When you buy, say, a Struble reel seat, you get first-rate metalwork. Beautifully machined threads and precisely fitted parts not only make it a pleasure to attach a reel to a rod, but also last for many years.

Several catalog houses offer graphite skeleton seats and wood inserts that fit them. That is, the seat consists of the fixed hood, threaded barrel, and sliding-hood assembly of a Fuji or Pacific Bay graphite reel seat, with a polished- or impregnated-wood insert. This type of setup has the advantages of a graphite seatâparticularly its low cost and light weightâbut also lets you build a rod with a handsome bit of hardwood on the bottom end. It represents a middle ground, both financially and aesthetically, between the least costly

option and a stylish skeleton seat with machined-metal hardware. It will work on any freshwater rod and, as long as you donât have to enlarge the i.d. of the insert too much, on many saltwater rods.

Another type of skeleton seat consists of metal hardware with a woven-graphite insert. This style is used on some factory rods for both its durability and its modern, high-tech appearance. Itâs a perfectly good type of reel seat, suitable for both fresh and salt water. Most builders of freshwater rods, however, prefer the looks of a wood-insert reel seat, which costs only a few bucks more, while saltwater anglers generally want an all-metal seat.



**A skeleton reel seat usually comes unassembled. Putting it together requires a little care, but itâs not at all difficult.**

You can also find a few skeleton reel seats that have cork inserts. The advantage of one of these is its light weight, and, some would say, its appearance, since the rodâs handle and the middle of the reel seat are made of the same material. On a light trout rod, a cork-insert seat works very well.

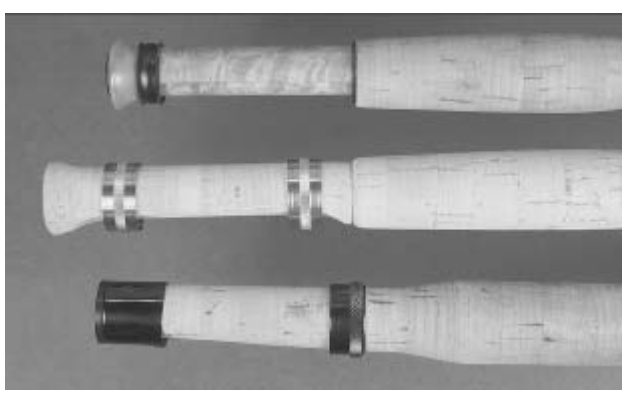
Most skeleton seats come unassembled: the wood insert and all the metal parts are separate pieces. Weâll look at how to assemble them a little later in this chapter.

**SLIDING-BAND OR SLIP-RING SEATS**

This type of reel seat doesnât hold the reel by means of a threaded barrel, nut, and sliding hood. Instead, a slip-ring design relies on friction between a metal ring, the material of the reel seat, and the reel foot. Some types employ a pair of loose bands or rings. On other sliding-band seats, one end of the reel foot goes into a fixed hood, and the other end is held by a metal band that jams into place.

By and large, slip-ring seats are reserved for very light trout and panfish rods. They were more common years ago than they are now. The arrangement actually provides plenty of security if the components are well made (I know saltwater anglers who have used rods with slip rings), but it doesnât *look* as if it will hang on to a reel while you fight a big fish.

The reel seat itself can be made of wood or cork, and the sliding bands can be aluminum or nickel silver. A cork-and-aluminum setup is about the lightest reel seat you can find, and itâs a good match for a short, featherweight trout rod. A sliding-band seat made of hardwood has a traditional, old-fashioned look. On all but the shortest, lightest rods, though, I prefer a skeleton seat.



**Sliding-band or slip-ring reel seats are used on some light trout rods. Shown here are different types on three factory rods. The cork reel seat in the middle is the lightest type, but also the most subject to wear and damage.**

**An uplocking reel seat (top) has the fixed hood at the upper end, next to the grip, and the threaded barrel at the bottom. A downlocking seat (bottom) has the opposite arrangement. Some seats can be mounted up- or downlocking; others can be mounted in only one direction.**

**UPLOCKING OR DOWNLOCKING?**

On a downlocking seat, the fixed hood is at the bottom. The sliding hood, driven by the nut, moves downward to clamp the reel to the rod; thus the name. An uplocking seat has precisely the opposite layout: The fixed hood is at the top, next to the grip, and the sliding hood moves upward to grab the reel foot.

These days, most factory rods have uplocking reel seats. Part of the reason, Iâm convinced, is simply fashion, though an uplocking seat does offer at least one advantage. By putting the excess threaded portion at the bottom of the rod, an uplocking seat provides a sort of built-in fighting butt: It has an inch or more of tube below the reel foot. If nothing else, that short, built-in extension keeps the exposed rim of your fly reel from rubbing on your vest while you play a rambunctious fish.

On a trout rod, the arrangement makes sense. An uplocking seat helps when you need to jam the butt of the rod into your

gut to play an oversized trout. Since that doesnât happen very often (for me, anyway), the built-in fighting butt of an uplocking seat is perfectly adequate. It helps when you need it, but doesnât look big and clunky when you donât.

On a saltwater, bass, pike, salmon, or steelhead rod, however, an uplocking seat might not by itself be enough. If you anticipate regularly having to jam the butt of your rod into the washboard muscles of your rippling torso, then you should equip your rod with a proper fighting butt (combined with an uplocking seat). Leverage is only one reason. The bottom end of an uplocking seat typically measures Â¾ inch or less across, and it has a flat cap. Thatâs not a very comfortable implement to shove against the aforementioned washboard stomach, or even a well-padded, middle-aged gut.

An uplocking seat also moves the reel closer to your hand and the rodâs center of gravity. Some folk argue that an uplocking reel seat reduces any pendulum effect created by the reelâs mass, and makes a rod feel lighter and crisper. Maybe. A contrarian could point out that, by moving the reelâs weight closer to the center of gravity, an uplocking seat requires you to use a heavier reel to achieve the same balance in the outfit, thereby increasing the total mass you move back and forth on every cast. Leverage works both ways.

Pay your money and take your pick. The extension-butt feature does come in handy, though I can count on one hand the number of times Iâve needed it while fishing for trout. On a light rod for trout or panfish, use whichever arrangement suits your taste or fancy; for most trout anglers, the practical differences between up- and downlocking seats arenât worth worrying about. On a bass rod, use either type of seat, but with a fighting butt, on the optimistic assumption that sooner or later you will have to lean on a big old largemouth to keep her from diving into the weeds. Equip a saltwater, steelhead, or salmon rod with an uplocking seat *and* a proper fighting butt.

**You can purchase matching, recessed handles for many uplocking reel seats, allowing you to build a rod with the fixed hood concealed in the bottom of the grip. These ready-made handles make it much easier for an amateur to create this popular effect.**

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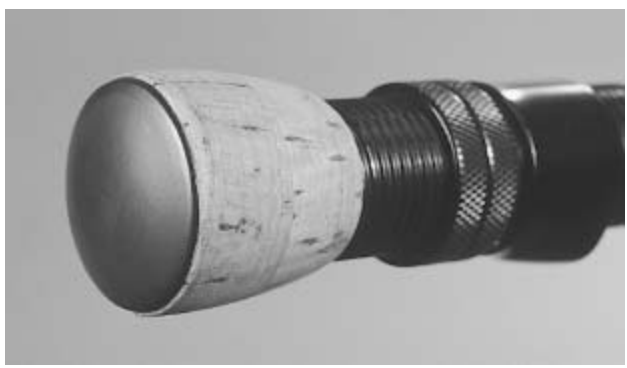
With an uplocking seat, itâs possible to âburyâ the upper, fixed hood in the handle; that is, the bottom end of the grip can be recessed so that a layer of cork hides the fixed hood of the reel seat. This makes for a most stylish effect, but one that takes a bit of work to create. Component makers solve the problem for us amateurs by making preformed cork handles with recesses that fit certain of their reel seats, saving us the trouble of building a handle from scratch or inletting the bottom end of a grip so that it will cover the fixed hood. Your catalogs will tell you which inletted grips go with which reel seats; when in doubt, pick up the phone and ask some questions.

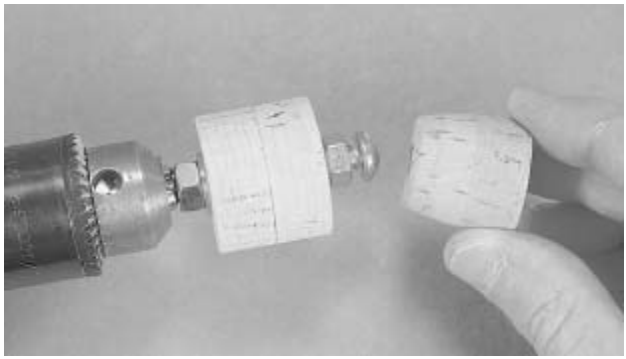
You will see in your catalogs that many uplocking reel seats come with âfittedâ corks to cover the fixed hood. Those corks are for a rod builder who makes the entire handle by gluing cork rings together on the blank and then shaping the grip on his rod lathe. A fitted cork isnât much use to an amateur who wants to use a premade handle. If you want an uplocking reel seat with the fixed hood buried in the bottom of the handle, you must pick a reel seat for which you can purchase a grip with the bottom end already inletted. A good catalog indicates

which components go together. Some companies will, for a few bucks, inlet a handle to fit a reel seat; Anglerâs Workshop offers this service.

Of course, you donât have to be a slave to fashion. Thereâs nothing wrong with an uplocking seat butted up against a plain handle. In fact, that simple arrangement has some advantages. It allows you to use a more slender handle, a good thing if you have small hands. Butting the handle against an uplocking seat also lets you taper the grip so that it âflowsâ into the reel seat, making for a very elegant look. Some uplocking seats, of course, are made to be used only with recessed grips. Once again, you pay your money and take your choice.



**The advantages of mounting a fighting butt directly on the blank are that it canât fall out or get lost, and it will always be there when you need it. You can buy all sorts of fighting butts or, for less than two dollars, fabricate your own, as I did on this rod.**



**Itâs easy to make a cork fighting butt. A 1/4-inch bolt, two washers, and two nuts serve as a clamp for gluing two cork rings together. After the glue dries, put the bolt in your electric drill and use the drill as a lathe to shape the cork.**

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**FIGHTING BUTTS**

Some heavy-duty reel seats come with fighting butts. Many other seats can be fitted with optional fighting butts made by their manufacturers. Using one of these usually entails replacing the seatâs end cap with a special fitting that holds the fighting butt. Itâs a simple, self-explanatory operation.

Reel seats with removable fighting butts seem popular, at least in catalogs. In theory, you can leave the fighting butt in your pocket until you anticipate needing it, in the meantime filling the hole in the bottom of the reel seat with a plug made for the purpose. Thatâs fine, as long as you always remember to put the fighting butt on the rod. A big fish rarely has the consideration to wait while you find the fighting butt, extract the plug from the reel seat, and insert the fighting butt. And if a part is removable, it is certainly losable, at least by me. Removable butts work very well once theyâre plugged into a rod. If you buy one, do yourself a favor: Glue the thing into the reel seat, making it permanent. It will be there when you need it.

Better yet, build the fighting butt right on the blank. Most rod-building suppliers sell cork or foam butts that are glued

directly onto the blank below the reel seat. Generally, one of these is easy to mount and relatively inexpensive. Fitting an on-the-blank fighting butt consists of enlarging the hole in the center with a rat-tail file until it fits the bottom end of the rod. You glue the butt onto the blank, and, after that glue cures, you glue a cap or plate (made of metal, plastic, hard rubber, or a rubber-and-cork composite) onto the bottom of the fighting butt.

If you want to save some money, you can make a fixed fighting butt for a few dollars. You need two or three cork rings (available from any rod-building supply house) and some sort of butt cap (ditto). Cork rings have holes in their centers. Letâs say the rings you buy have Â¼-inch holes. Scurry down to the hardware store and buy a Â¼-by-20 bolt about 3 inches long, some washers to fit the bolt, and four nuts. If you donât own any wood glue, pick some up.

Use the bolt, nuts, and washers as a clamp to glue the cork rings together. After the glue dries, chuck the end of the bolt in your electric drill. Run the drillâhalf speed or higher will doâand use sandpaper to shape the cork. Sand one end of the piece to the diameter of the butt cap, and the other end to the outside dimension of the reel seat. Then file the hole in the cork piece to fit the bottom of the rod blank, and glue the fighting butt on the blank. Glue on the cap, and you have a permanent, good-looking fighting butt. If you felt extravagant and sprang for a fancy metal butt plate, you might have spent as much as five dollars. A tightwad like me can use a plastic dashboard fastener from the hardware or auto-parts store, and do the job for less than two bucks. Incidentally, my $2 fighting butts are virtually identical to some Iâve seen on $600 rods. One of the construction sequences later in this chapter shows how to make this type of fighting butt.

Mounting a fighting butt directly on the blank does shorten the effective length of the rod by an inch, since you will have to move the reel seat and handle that far up the blank. If you notice that this makes any change in the rodâs action, you are far more sensitive than I. If youâre a saltwater, salmon, or steelhead angler, most of the rods you already own have on-the-blank fighting butts.

Cork fighting butts take a beating, not so much from

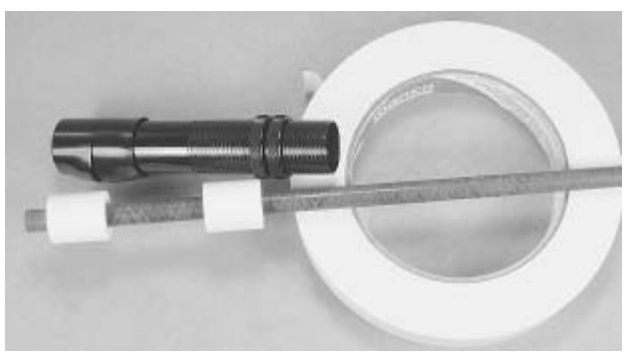
fighting fish, but because we all use them as hangers with which to suspend rods from boat seats, canoe thwarts, and so on. Itâs not a bad idea to give a fighting butt a coat of cork sealant, which toughens the cork and reduces the likelihood that it will chip. Most supply houses carry sealant.

**FITTING REEL SEATS**

When you mount a reel seat on a blank, you glue a stick inside a tube. Or, if you prefer fancier language, you cement a shaft inside a cylinder. To do it well, you need to center the stick within the tube, and then create a secure, durable bond between the parts. You accomplish the former by making bushings on the blank. Creating a sturdy bond between the blank and seat entails carefully preparing the parts and using a suitable adhesive.

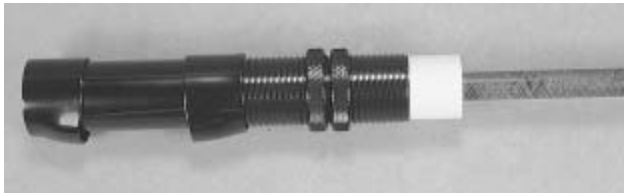
As Ian Anderson noted in a song a long time ago, nothingâs easy. The inside diameter of a reel seat usually exceeds the outside diameter of the rod blank, sometimes by quite a bit. We need to fill the space between the inside of the seat and the outside of the blank, and we need to take up the space evenly all the way around the blank. In other words, we need to make bushings that are concentric with the blank.

Rod builders have devised many ways to do this. To build most fly rods, you need to understand only three. Actually, one type of bushing will do the job on most fly rods.



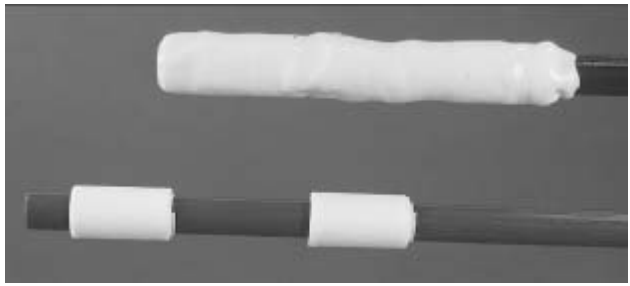
**Masking tape provides the easiest way to make bushings for a reel seat.**

Masking tape provides the easiest way to make bushings. As you wrap a band of tape on the blank, you automatically create a concentric bushing. You have very precise control of the diameter of the bushing, because you determine its size to within the thickness of one layer of masking tape.



**A pair of masking-tape bushings perfectly center the blank inside the reel seat. Itâs a foolproof method, though tape bushings add a good deal of weight when used with a thin graphite blank and a tubular metal reel seat.**

**Masking-tape bushings work particularly well with a skeleton reel seat. The seatâs wooden insert has a relatively small inside diameter, which means that you donât have to make very large bushings.**



**Hereâs why bushings, even those made of masking tape, work. We apply paste epoxy not only to the surfaces of the bushings, but also to the space between them and at each end, creating a solid cylinder of adhesive (top). If the bushings magically disappeared, the reel seat is still secured by solid bands of epoxy.**

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You can make two bushings with Â¾-inch masking tape, or three equally spaced bushings with narrower tape. The bushings shouldnât reach to the ends of the reel seat; you want a little space for glue inside each end of the seat. Generally, the ends of the seat should overreach the bushings by Â¼ inch or thereabouts.

I know what youâre thinking. Are we going to rely on bands of *masking tape* to hold the reel seat on the blank? Is that any way to build a fly rod?

It is, because we donât rely on the tape to hold anything. The bushings act only as centering devices. We coat them with glue, but we also fill the space (or spaces) between them with epoxy, forming a solid layer of glue between the inside of the reel seat and the blank. If the masking-tape bushings magically evaporated after we mounted the reel seat, the seat would remain firmly stuck to the blank, secured by solid bands of epoxy.

A lot of very big fish, including tarpon and billfish, have been caught on rods built with masking-tape reel-seat bushings. You will shatter the blank before you could twist off a reel seat mounted this way.

Masking-tape bushings work very well with a skeleton reel

seat. The difference between the i.d. of the wood insert and the o.d. of the blank is relatively small, which means that you donât have to make very thick bushings. Letâs say that youâre building a 3-weight trout rod, using a blank with a butt diameter of .300, which is mighty thin. To keep life simple, you wisely ordered a Struble reel seat with a wood insert that has an i.d. of .360. The difference is .060, which means that your tape bushings need to be .030 in depth. That translates to less than 1/32 of an inch. Just a few wraps of tape will center the blank within the reel seat. The solid bands of epoxy between the tape bushings will provide an unbreakable bond.

Even if the i.d. of the reel seat exceeds the diameter of the blank by a full Â¼ inch (.250), you can still use masking-tape bushings. Each bushing will be 1/8 inch (.125) thick. About the only time you would need bushings this thick would be to mount a size 16 graphite reel seat on a light, thin blank.

But if you have to do that, you can use graphite bushings. Both Fuji and Pacific Bay manufacture these bushings (sometimes called arbors) in sizes to fit the inside diameters of their reel seats. Theyâre made of a dense, graphite-filled foam that weighs practically nothing. Letâs use that skinny 3-weight blank again as an example. Its butt measures .300. A size 16 Fuji reel seat has an i.d. of .605. Thatâs a difference of .305. You can do the job with masking-tape bushings, but youâll add a lot of weight, because you will fill a lot of space with tape and epoxy. The solution is to use size 16 Fuji graphite bushings with an i.d. smaller than the diameter of the blankâ.240, say. With a rat-tail file, enlarge the hole in the center of each bushing until it fits the blank, taking care to keep the hole centered and straight. Then glue the bushings to the blank. After the epoxy cures, mix another batch and glue the reel seat to the bushings. This makes for a very strong, but very light connection between reel seat and blank. On a blank with a butt diameter of .400 or less, graphite bushings can save a good deal of weight.

**Graphite bushings are strong and very light, and they greatly simplify mounting a graphite or tubular metal reel seat. The bushings are the dark cylinders in the middle.**

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**Graphite bushings are made to fit the inside diameters of graphite reel seats. You enlarge the hole in each bushing until it fits the rod blank, glue the bushings to the blank, and then glue the seat in place. These bushings work with metal reel seats, too, though youâll have to sand the o.d. of each bushing to fit the inside of whatever aluminum seat youâre using.**

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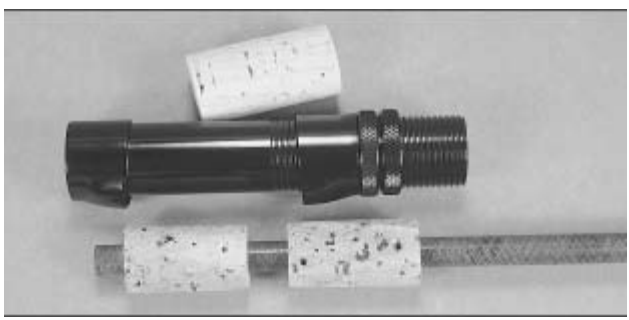
Although theyâre manufactured to fit specific models of Fuji or Pacific Bay reel seats, graphite arbors also work with many other seats. The foam material is very strong, but itâs easily shaped with a file or sandpaper. If you were using, say, an all-aluminum saltwater reel seat, you could order graphite bushings with an outside diameter slightly greater than the i.d.

of the seat. Then you could reduce the diameter of each bushing by sanding it by hand (which is easier than it sounds) or by mounting the bushing on a small bolt and using an electric drill as a lathe with which to spin the bushing. Once youâve reduced the o.d. of each bushing to the right size, proceed as described above.

The third type of bushing is cork, which isnât used much nowadays. But letâs say that you wanted to put an economical Pacific Bay aluminum reel seat on a 5-weight rod. The seat has an inside diameter of .630, and the blankâs butt measures .360. The difference is .270. Again, tape bushings will work, but thatâs a lot of space to fill with masking tape and epoxy. On this rod, one solution is to use cork bushings.



**Cork bushings, though largely replaced by graphite-filled foam bushings, work perfectly well on freshwater rods with aluminum reel seats. The bushings must be fitted to the inside diameter of the reel seat (a bolt and an electric drill can serve as a lathe) and then to the rod blank.**

A cork bushing looks like a wine-bottle cork with a hole drilled lengthwise through its center. You need a pair of them. Using them entails turning down their outside diameter to fit the inside of the reel seat, then enlarging their holes to fit the rod blank.

An electric drill will serve as a lathe on which to turn down each cork. Letâs assume that the bushings have Â¼-inch holes.

Slip a bushing onto a Â¼-inch bolt at least an inch longer than the bushing. Secure the cork with a washer and a nut. Clamp the end of the bolt in your drillâs chuck. Run the drill at a good clip, and hold a piece of sandpaper against the spinning cork. Watch the cork evaporate. Use light pressure, and work carefully; you donât want to grind the cork to a tapered shape. Turn down the bushing until you can just slide the reel seat over it. Remove the cork from the bolt, replace it with the other bushing, and repeat the operation.

Use a rat-tail file to enlarge the hole in the first bushing until you can slide it into position on the rod blank. Take care to keep the hole straight and centered. Mark the bushingâwith an *L* for âLowerââso you will know that it goes on the blank first. Then file the hole in the second bushing until you can slide it to within about Â½ inch of the first cork; mark this bushing with a *U* for âUpper.â With both bushings on the blank, test-fit the reel seat on them. If the seat wonât fit, gently sand the bushings by hand until it does.

To mount the reel seat, fasten the bushings to the blank with a thin layer of epoxy. Let the glue cure, then attach the reel seat with a fresh batch of epoxy applied over the bushings and in the space between them.

Since you will use it only on lighter rods, the cork-bushing method is strong enough. After all, how much strain does the reel seat of a trout or panfish rod have to endure?

On a saltwater rod, the difference between the diameter of the blank and the i.d. of the reel seat will be less than in the preceding example. A Struble U7 aluminum reel seat, for example, has an inside diameter of .584. The thinnest 8-weight blank will have a butt diameter of around .360; a typical 8-weight rod measures .400 or more at the butt. Even with the thinner blank, however, the difference is .224. Each bushing has to be only .112 thick, or less than $^1/_8$ inch. Masking tape will work fine in this case. Indeed, you can use tape bushings on just about any saltwater rod that will have an all-metal reel seat.

So far, weâve looked at ways to fill space between the blank and the inside of the reel seat. With some rods, you might face the opposite challenge. If you want to put a skeleton seat with a wood insert on a relatively heavy blankâto

make an 8-weight rod for steelhead or salmon, for instanceâyou might have to enlarge the hole in the insert with a rat-tail file. If you need to do that, rotate the insert after every few strokes with the file, and pause frequently to check the hole. Donât use a wood-insert seat if you will need to remove more than about 1/16 inch of wood. Keeping the hole straight and round is tricky when you remove a lot of wood. And even if you do a neat job, filing away 1/8 inch of wood might weaken the insert. A big rod should get an all-metal or graphite seat.

**MOUNTING A REEL SEAT**

Glue sticks better to rough surfaces than to smooth surfaces. If your blank has a glossy finish, as many do, score the area to be occupied by the reel seat and grip. This is easily done by folding a piece of 100-grit sandpaper around the blank, and then twisting the blank within the sandpaper. Donât chew up the blank; you need only to make some scratches in the gloss coat. Use very little pressure. Do not score a blank that has a matte finish. Some of these blanks have no topcoat at allâshould you try to score one, you will immediately start cutting the graphite fibers, greatly weakening the rod. The matte surface of the blank will hold the epoxy well enough.

Score the inside of a metal or skeleton reel seat, too. A rolled-up piece of 60-grit sandpaper will get the job done. Twist the roll inside the seat, then slide it back and forth to make a crosshatch of scratches.

After scoring the parts, clean them with a rag soaked with rubbing alcohol. The alcohol will remove any dirt or oil residue, including that left by your fingers. Glue does not stick well to dirty or oily surfaces.

A reel seat should be mounted with thick, gooey, paste epoxy. Thin epoxies, such as those you might use to coat the heads of streamer flies, have more than enough strength, but they wonât stay in place while you slide the seat into position. Remember that you will not only apply glue to the bushings, but also completely fill the space or spaces between the bushings, creating a solid, cylindrical blob of adhesive. If you tried to do that with ordinary household epoxyâDevconâs 2-Ton Epoxy, for instanceâthe stuff would drip off the rod before

you could push the seat into place. Youâll end up with glue all over the place, except where you want it.

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**If the blank has a glossy finish, use sandpaper to *lightly* score the area that will be occupied by the reel seat and handle. You want only to produce a crosshatch of fine scratches to make for a better glue bond. Donât do this on a blank with a matte finish.**

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**Score the inside of a reel seat to give it some âtoothâ for the epoxy. A rolled-up piece of coarse sandpaper will do the job. After scoring it, clean the inside of the seat with an alcohol-soaked rag.**

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Most rod-building supply houses carry paste epoxies; U-40âs Rod Bond is a good example. Your local hardware store might sell PC-7, an astonishingly strong paste. Do not use fast-setting, five-minute epoxy to mount a reel seat or handleâyou wonât have enough working time. If the reel seat is halfway into position when fast-setting epoxy decides to get stiff, you

will have made a very costly tomato stake.

As you slide a reel seat into place, it will push a blob of excess glue before it. You donât want to muck up the outside of your jazzy real seat with glue. So, before you even mix the epoxy, wrap the ends of the reel seat with masking tape. Any excess glue will end up on the tape. Once the seat is in place, and before the epoxy sets, peel off the tape. A rag or paper towel moistened with alcohol will remove small smears of wet epoxy from the ends of the reel seat.

Donât forget to align the fixed hood of the reel seat with the spine mark on the butt section of the blank. And do not, therefore, forget to locate and mark the spine before tackling the reel seat. If you skipped the preceding chapter, go back and study the section about spines.

On a rod that doesnât have a fixed fighting butt, you will mount a reel seat by sliding it onto the bottom end of the blank. Be sure to leave room for the butt cap or plugâthe end of the seat must not be flush with the end of the blank. On a rod with a fighting butt glued directly to the blank, you will slide the reel seat onto the upper end of the butt section.

Weâll repeat all this stuff, in excruciating detail, as we build several rods later in this chapter. If itâs not clear yet, it will be soon.

**Always be sure to leave room for the plug or cap in the bottom of a reel seat. The end of the seat must extend far enough beyond the end of the blank to let you insert the plug. Take this into account when you make the bushings on the blank.**

**HANDLES**

A professional rod builder makes a cork handle from scratch, gluing Â½-inch-thick cork rings to the blank one at a time while simultaneously gluing each ring to the one that preceded it. After the glue cures, the pro chucks the end of the blank in a high-speed rod lathe, and, while the rod spins at 3,000 rpm or so, sands the cork to shape.

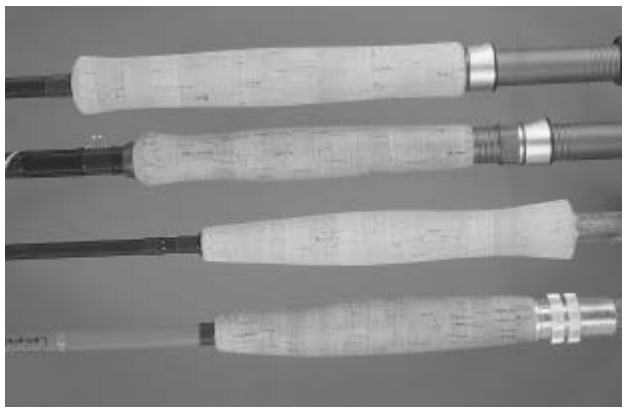
Thatâs a crackerjack way to make a handleâif you have a rod lathe. I donât, and, since youâre reading a book for amateurs, Iâll assume that you donât either. Happily, we jackleg rod makers can buy ready-made, preshaped, nicely sanded cork grips in a great variety of styles. A ready-to-go handle costs only a few dollars more than the stack of cork rings weâd need to make a handle from scratch, and it saves amateurs like us hours of work and anguish. So do not wonder how you can fashion a custom grip; buy a preshaped handle and rejoice.

Grips come in a heap of shapes. Arguments that a particular style gives you superior casting or fish-fighting power strike me as a lot of hooey. The most important thing is to use a grip that feels comfortable in your hand. Some rod companies seem fond of enormously wide grips, equipping even their medium-weight rods with stout full-Wells handles. Such grips are fine if you have larger-than-average hands. Some of us, though, are better off with thinner grips. I find a plain old cigar grip good enough on most freshwater rods.

On rods for heavier lines, the full Wells is the most popular style of handle, though a half-Wells or Fenwick style is also good. Most fly casters agree that one of these robust grips works best on a powerful rod, because the flared upper end gives your thumb something solid to push against. If you have small hands, however, you might be happier with a more slender grip, even on a heavy-line rod. On a trout rod, you can use whatever shape appeals to you; this really is a personal decision. Hands come in many sizes and shapes, and thereâs really no such thing as an all-around-perfect handle on any rod.

If you want a recessed handle for an uplocking reel seat, your choices are more limited. You cannot buy a slender, cigar-shaped grip and expect to have it inletted to accept the

fixed hood of an uplocking seat; the handle simply isnât wide enough. We amateurs have to think of a ready-made, recessed handle and an uplocking reel seat as matched components, and we have to take whatâs offered. Thatâs why, on a light rod, Iâll usually forgo the stylish recessed cork, opting for a thinner grip that feels good in my bony little hand, and fitting the rod with a reel seat that simply butts against the grip. Again, itâs a personal decision.



**Preshaped cork grips come in a bunch of styles. Selecting a handle is largely a personal matter; no one shape is best for all anglers. Generally, though, light-line trout rods get fairly slender handles, and rods for heavier lines have more robust grips.**

## MODIFYING AND IMPROVING HANDLES

Preshaped cork handles vary in the quality of their material and workmanship. Less expensive grips typically have more pits than higher-priced specimens, though most manufacturers do a good job of filling pits. Expensive handles generally have a nicer finish and more symmetrical shapes than do cheap handles.

But you can make an inexpensive handle as smooth as a babyâs bum. You need a variable-speed electric drill, a 1-foot

piece of threaded rod the same diameter as the hole in the handle, and some washers and nuts to fit the threaded rod. Slide the grip onto the threaded rod, and secure it with a washer and a pair of nuts at each end. Put one end of the rod in your drillâs chuck. Lay the drill on your workbench, run it at high speed, and gently sand the spinning grip with a piece of 400-grit sandpaper. Use very light pressureâthe goal isnât to grind off a lot of cork but, rather, to polish the surface of the handle. You can greatly improve a âbudgetâ grip with this simple trick.

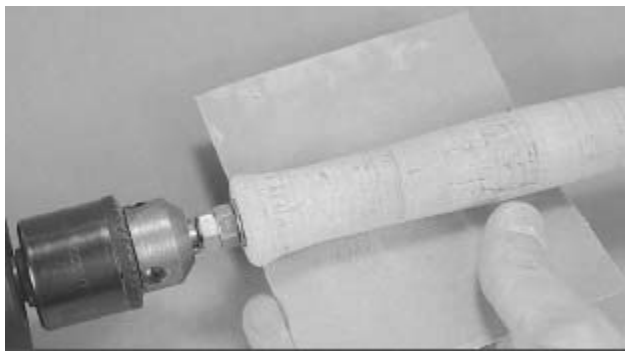
**An electric drill, a piece of threaded rod, and some nuts and washers can become a lathe for changing the shape or improving the finish of a handle. An expensive, top-quality grip, however, should be left alone; nothing you can do will improve it.**

You can also use a drill and a hunk of threaded rod as a lathe with which to modify the shape of a handle. Iâve done this a number of times when I wanted to make a grip narrower or alter its taper; I particularly like to sand down the bottom end of a handle so it matches the diameter of the reel seat. If you want to modify a grip, start with 100-grit paper held lightly against the spinning cork. When youâve reduced the grip almost to the shape you want, switch to 240-grit sandpaper, and then polish the cork with 400- to 600-grit paper. If youâre at all sensitive to airborne dust, wear a dust mask for this operation, since you will produce a cloud of tiny

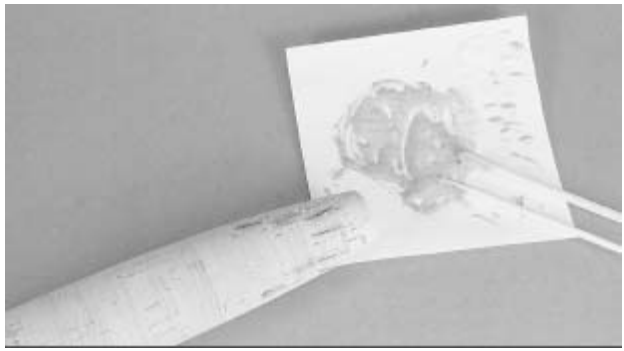
cork particles.

You will also produce a pile of cork dust on your workbench. Save this stuff; I store mine in empty 35mm film cans. Youâll need the cork dust to fill the pits you uncover by sanding the grip. When youâre happy with the shape of the handle, tap it on your workbench to knock off the dust clinging to it. Blow the dust out of the pits youâve uncovered. Stick a Post-it note to your bench and squirt two small puddles of glue onto it; you can use a weather-resistant wood glue, Duco Cement, Loctite Household Cement, or anything similar. Leave one puddle of glue alone; you will use it to prime the pits. With a flat toothpick, mix some cork dust into the other puddle of glue, producing a sticky paste of adhesive and dust.

Prime each pit by dabbing some plain glue into it with a round toothpick. Apply the glue sparingly; you want to coat the inside of the pit with just a thin layer of adhesive. With another toothpick, fill the pit with your glue-and-cork-dust paste. Try not to make a big lump of paste, since youâll only have to sand it down later.



**To use your ad-hoc cork lathe, run the drill at half speed or higher and hold a piece of sandpaper against the spinning handle. Use 400-grit paper to polish the surface of a grip; to change the shape of the cork, start with 100-grit paper or coarse emery**



**Sanding a grip to change its shape inevitably uncovers a lot of pits. You can fill them with a paste made of glue and some of the cork dust produced by sanding. After the patches cure, sand them level with the surface of the grip, and then polish the entire handle with 400-grit sandpaper.**

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After filling the pits, set the handle aside to let the glue and paste cure. After the patches have hardened, sand each one with fine paper. Then use your threaded rod to spin the handle with your drill, and polish the cork with fine sandpaper. When youâre done, youâll have a smooth, lovely handle to rival those on high-priced factory rods. Use the same method to fill pits on a homemade fighting butt.

Check the front end of your handle. If itâs rough or uneven, lap it on a piece of fine sandpaper. Lay the paper flat on your workbench, and hold the handle tip-down on it. With very little pressure, move the handle in a figure-8 motion over the sandpaper. After you make four or five figure-8s, rotate the handle a quarter turn and lap it some more. Rotate it again, and make a few more figure-8s. This method keeps you from sanding the end of the grip at an angle.

I treat most rod handles with cork sealant, a watery, quick-drying finish that soaks into the surface of a grip. Some anglers donât like sealant because it changes the texture of the corkâif unsealed cork feels like velvet, a sealed grip feels more like a good cotton twillâand because it darkens the handle a little. But the altered texture wears down as you use a rod, and all handles darken with use. I like sealant because it both

toughens the cork, making it considerably less likely to chip, and makes a handle much easier to clean when it becomes truly grimy. Even if you donât use cork sealant on handles, you should apply it to cork fighting butts, which generally get knocked against belt buckles, canoe thwarts, stones, and other hard objects.

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**If either end of a handle is rough or uneven, correct the problem by lapping the grip on a piece of fine sandpaper. Use a figure-8 motion, and rotate the handle a quarter turn after every few figure-8s.**

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**Cork sealant toughens a grip and makes it easier to clean, but it also changes the feel of the cork. Some rod makers hate the stuff; others always use it, tolerating the altered texture of the cork for the sake of greater durability.**

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**FITTING AND MOUNTING HANDLES**

Most ready-made cork grips have Â¼-inch holes through their centers, though a few come with 3/16- or 3/8-inch holes. The butt end of your blank will almost certainly be wider than the hole in the handle. And so you must enlarge the hole until it fits the blank.

A pair of rat-tail files will let you fit a handle to most light- and middle-weight graphite blanks. The smaller file should be barely wider than the original hole in the grip; that is, the tip should measure a tad less than Â¼ inch, and the fat end should measure somewhere between 5/16 and 3/8 inch. The larger file should be the next size up. Good files are worth every penny they cost; Iâve had my pair of Nicholson Black Diamond rat-tails for more than a decade.

When you fit a grip to a blank, you need to keep the hole centered as you enlarge it, and you must taper the hole so it matches the taper of the blank. This is not an operation for impatient peopleâI usually spend 20 to 30 minutes filing the inside of a handle. If you exercise similar patience, you can achieve a perfect result every time.

Lay the grip on your workbench with the bottom end

pointing toward you. Insert the tip of your smaller file, and, with light pressure, make five or six gentle strokes. Then rotate the grip about an eighth of a turn and make another five or six strokes, also with light pressure on the tool. Rotate the handle another eighth of a turn and make another five or six strokes. And so onâcount the strokes aloud if you have to, and rotate the handle after making the same number of strokes in each spot. Thatâs how you keep the hole centered. Make sure the file enters the handle straight, and not at an angle. You might find it helpful to put an index mark on the cork so that you can tell how much youâve rotated it; a sliver of masking tape makes a good temporary mark.

After youâve rotated the handle about half a turn, remove the file. Hold the grip upright and tap it on your workbench. A pile of cork dust will fall out of the handle. Blow through the hole to get rid of the rest of the dust, and then resume filing the hole. Clean the hole like this frequently; if you donât, youâll end up sliding the rat-tail file back and forth on a layer of cork dust inside the hole, instead of using it to cut the cork. Donât bother to save the dust produced by filing; itâs too coarse to use for filling pits.

Once you can fit your entire small file inside the grip, turn the handle around and file the hole from the upper end. When the small file can slide through the hole from end to end, itâs time to switch to your larger fileâif you need to. If youâre working with a thin blank for a light line, you might be able to do the whole job with your smaller file.

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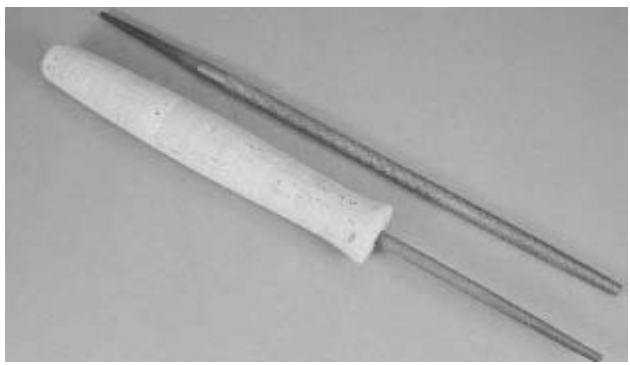
**Hereâs the central challenge of fitting a handle to a blank: The rod is thicker than the hole in the cork. This fiberglass blank is a lot fatter than the hole in the grip; with a graphite blank, the difference between the rodâs o.d. and the handleâs i.d. would be much less.**



**If you need to enlarge the hole in the grip only a little, as you might if you have a slender graphite blank, you can do the job with a couple of rat-tail files. Start with a file that barely fits inside the handle, and then progress to a larger file.**

The second trick to fitting a grip to a blank is to stop frequently to test-fit the handle. Itâs easy to remove too much cork. Donât wait until the hole looks almost large enough before sliding the grip onto the blank to check its fitâyou may get a nasty surprise.

As you test-fit a handle, you might see that the hole binds on the blank at one end, yet fits loosely everywhere else. Or you might find that the midpoint of the grip binds against the blank, and that the hole at each end has plenty of clearance. When you run into either of these situations, turn your file around. Put the fat end inside the handle, and cut the cork on the draw stroke rather than on the push stroke. By using the

fat end of a file, you can enlarge the hole deep within the handle without removing any cork from the end closest to you. Work slowly and carefully, stopping frequently to test-fit the grip on the blank. Note where it binds, and use the fat end of a file to remove cork from only that area.

If youâre building a heavy rod or working with a fiberglass blank, you might have to make a pretty big hole in the handle. Rod-building companies sell special reamers that speed up the job. These reamers consist of pieces of heavy fiberglass rod blanks coated with coarse grit embedded in epoxy. They go through cork like an oxyacetylene torch goes through a cheap exhaust pipe, and therefore must be used with care. They also leave ragged edges. When I employ one of my tapered reamers, I stop using it when the handle slides to within a foot of its final position. I then use my big rat-tail file for the final fitting, slowly and tediously cutting cork on the draw stroke until the handle fits perfectly. That way, I end up with a nice, clean hole at the top end of the grip. Itâs easy to ruin a handle by applying a tapered reamer carelessly or with too much vigor, but Iâm very glad to have such tools when I fit a grip to a fat blank.

Every now and then, a chunk of grit will come off a reamer and get stuck inside the handle. When you slide the handle onto the blank to test the fit, that piece of grit can make a long, deep scratch in the blank. If you do use a tapered reamer, be sure to knock and blow all of the dust out of the inside of the handle before test-fitting the grip to the blank.

Ideally, the top end of your grip will fit the blank snugly; the bottom end can have up to $1/32$ inch of play. The worst possible fit is tight at the bottom and loose at the top; when you slide the grip onto the blank, the tight lower end will scrape the glue before it, leaving none to fill the gap between the loose-fitting top end of the handle and the blank. This sort of craftsmanship is why the handle of a cheap factory rod comes unstuck.

**The hole in a grip can be greatly enlarged with a tapered reamerâa hunk of heavy rod blank covered with abrasive grit. You can use a tapered reamer like a file, sliding it back and forth, or by gently twisting the tool inside the grip.**

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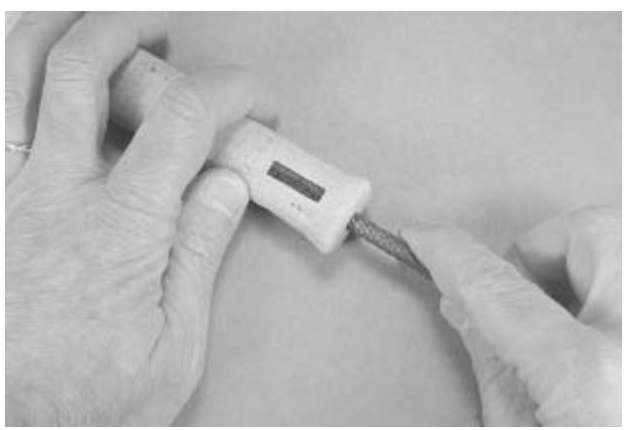

**When you open up the hole in a grip, you have to keep it centered and give it a slight taper. Make four or five light strokes with a rat-tail file, rotate the grip an eighth of a turn, make another four or five strokes, rotate the grip another eighth of a turn, and so on. A slip of tape serves as an index mark that tells you how far youâve rotated the**

**handle. Stop frequently to knock the cork dust out of the grip and to check its fit on the blank.**

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Once you can slide the handle into place, check its fit against the reel seat. If the grip butts against the reel seat, make sure the bottom end of the handle fits squarely against the upper end of the seat. If it doesnât, lap it on a piece of fine sandpaper until it fits perfectly against the top of the reel seat.

If youâre using an uplocking seat and a grip thatâs recessed to accept the fixed hood, check the fit of the recess. You shouldnât have to force the handle over the fixed hood of the reel seat; if you do, you might split the cork. Roll up a small piece of fine sandpaper, and use it as a rasp to fit the recessed part of the grip to the fixed hood of the reel seat.

Glue the handle to the blank with epoxy or a flexible evaporative cement. Iâve always had good results with the same paste epoxy I use for reel seats, and with Devconâs 2-Ton Epoxy. Before applying glue to the blank, wrap the top end of the reel seat with masking tape; this will keep excess glue from oozing onto the seat. Smear a layer of glue on the entire area of the blank the handle will occupy, plus about an inch more above the handle area. Slide the grip onto the blank. When it hits the glue, start twisting the grip to distribute the adhesive inside it. Continue twisting the grip as you push it down to the reel seat. If it pushes a big blob of epoxy before it, use a folded piece of paper to remove some of the excess glue. Slide and twist the grip into place, scraping excess glue off the blank as you need to.

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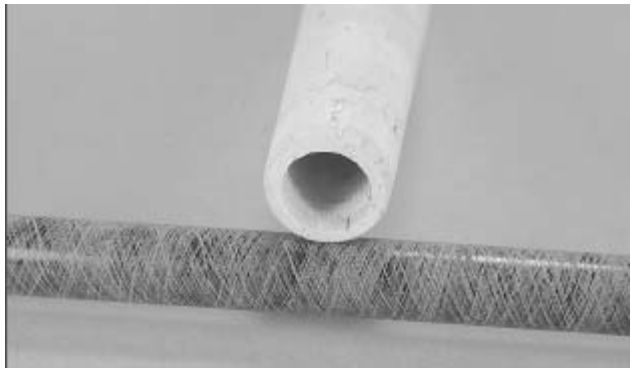

**If you work carefully, you can remove a lot of cork and still keep the hole round and centered. To make it fit this 7-weight fiberglass blank, I had to reduce this handle to little more than a shell of corkâbut the hole is still right in the middle.**

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**When you glue the handle to the blank, protect the top of the reel seat with a wrap of masking tape. The tape keeps any excess epoxy displaced by the handle from getting on the reel seat. Once the handle is in place, remove the tape from the reel seat.**

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When the grip is bottomed against the reel seat, remove the protective wrap of masking tape from the seat. Clean up any excess epoxy along the seam with a paper towel moistened

with rubbing alcohol. Use another paper towel, also moistened with alcohol, to clean the blank above the grip. Check to make sure that the handle is seated firmly against the reel seat, inspect both ends of the grip for little blobs of excess epoxy, and then set the assembly aside to let the glue cure.

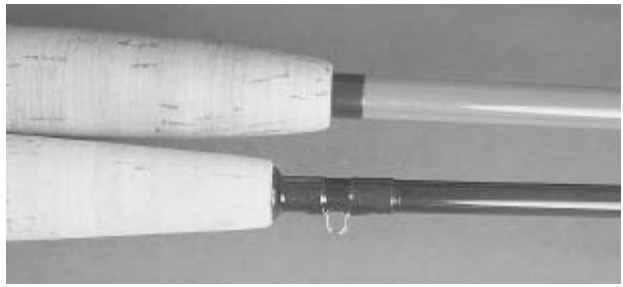
If youâre using a recessed grip that will cover the fixed hood of an uplocking seat, apply a thin layer of glue inside the recess before sliding the handle onto the blank. This glue will bond the cork to the fixed hood.

Confusing? Only because weâve dealt with a ton of material in very little space. As you study the sample installations later in this chapter, all will become clear. What will also become clear, I hope, is that none of this requires genius or even talent. Forethought, care, and patience will let you assemble the bottom end of any fly rod. Dry-fit the parts before you apply glue to anything. Once youâre happy with how everything fits, glue the reel seat in place. Let the glue cure, and then fasten the handle to the blank. Once the handle is in place, the hard work of rod building is done. Honest.

**WINDING CHECKS**

*Winding check* is one of my favorite euphemisms. It suggests that the part functions only as a firm surface against which one makes a thread wrap. A winding check serves that purpose, but thatâs not all it does. If you file the hole at the top end of a handle slightly out of round, or if you give it a ragged, chipped edge, you can conceal your sin with a winding check. That might be why all cheap rodshave winding checks; *ragged-hole hider* might be a better name. Still, a winding check adds a decorative touch and does indeed give you a firm surface against which to butt the hook-keeper wrap.

Winding checks range in quality from molded-plastic rings to beautifully made nickel-silver ornaments. One of my favorite types, called a Dye-Check by Clemens Custom Tackle, is made of hard, translucent plastic that can be colored with ordinary household dyes to match the color of the blank, the guide wraps, or the reel seat.



**Itâs up to you whether to use a winding check or hook keeper. The top rod has neither; the bottom rod has both.**

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In general, I use a winding check that matches the quality and finish of the other components. I wouldnât spring for a knurled, nickel-silver check on an inexpensive rod fitted with a graphite reel seat; on such a rod, Iâd use a plastic winding check. On a more elegant rod equipped with a handsome skeleton reel seat, Iâd use an aluminum or nickel-silver winding check the same color as the metal parts of the seat.

Or Iâd use none at all. If you file the hole in the handle carefully, you donât have to conceal ragged cork or an out-of-round opening. Since I take my time when I fit a grip to a blank, I can usually omit the winding check and butt the hook-keeper wrap right against the top of the handle. I rather like this effect, probably because itâs unusual.

You might have to do a little arithmetic when you select a winding check, because many of them are designated by fractional sizesâ$^{23}/_{64}$, $^{25}/_{64}$, and so forth. The diameter of the butt end of a blank, however, is always listed as a decimal measurementâ.362, .425, or whatever. Do the math and then pick a winding check .050 to .070 smaller than the butt measurement of the blank. If you buy a check that turns out to be a tad too small, you can enlarge the hole with a rolled-up piece of sandpaper.

**HOOK KEEPERS**

By tradition, nearly all fly rods have hook keepers above their handles. On most factory rods, the keeper consists of a piece of

wire bent to shape and then flattened on the ends. We who build our own rods can choose from traditional wire hook keepers, nifty folding jobs, classy nickel-silver models, and, for those with money to burn, sterling-silver fly keepers.

Or we can choose not to use one. Increasingly often, thatâs what I do. I nearly always use a leader at least 9 feet long. Since the hook keeper is above the reel, the junction of my fly line and leader ends up inside the guides. I much prefer to bring the leader down and around the reel, and then back up the rod, hooking my fly on one of the guides. That way, I have at least a few feet of fly line outside the guides, and I can start casting very easily.

Yet I still put hook keepers on about half the rods I build. I have to make a wrap above the grip anywayâa rod looks naked and unfinished without oneâand so I might as well wind on a hook keeper while Iâm at it; every now and then, the thing comes in handy. But I never put a keeper on a rod shorter than 8 feet, because I know Iâll never use it.

On most of my factory rods, the hook keepers are located smack in the middle of the bottom of the blank. That position puts the keeper in line with the guides, but it also puts it where the line can rub against it when I strip in a fish by hand. When I mount a hook keeper on a rod, I put it on the bottom of the blank, but off to the side a little, where it canât interfere with my line.

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**Inexpensive hardware doesnât have to look cheap. This handle and plastic winding check were shaped with sandpaper to fit each other, creating a smooth, handsome**

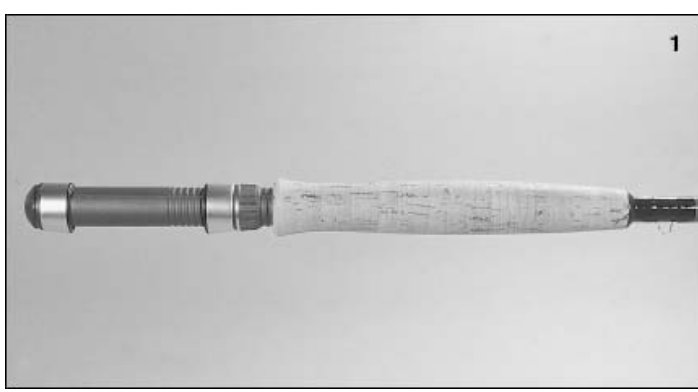
**transition from cork to rod blank.**

Like guides, a hook keeper must have its feet ground before it is wrapped to the blank. Leaving the feet square produces a sharp, unsightly bump in each wrap. A small file or an oilstone will taper the feet; weâll deal with the technique in the next chapter.

**FOUR SAMPLE RODS**

Each of the following examples addresses a different challenge and solves a different set of problems. What I hope to accomplish is not just to show you how to fit and install four reel seats and handles, but also to show you how one rod builder thinks. These four combinations, after all, represent a tiny fraction of all the possible installations. Each of these rods is less a model to be copied than an example of how to fit a bunch of parts to one another to produce a neat, durable whole. Iâd be flattered if you emulated my work on one of your own rods, but Iâd be far happier if you used these examples to learn how to solve challenges, and then built a fly rod that surpasses any of mine.

**A Downlocking Graphite Seat**

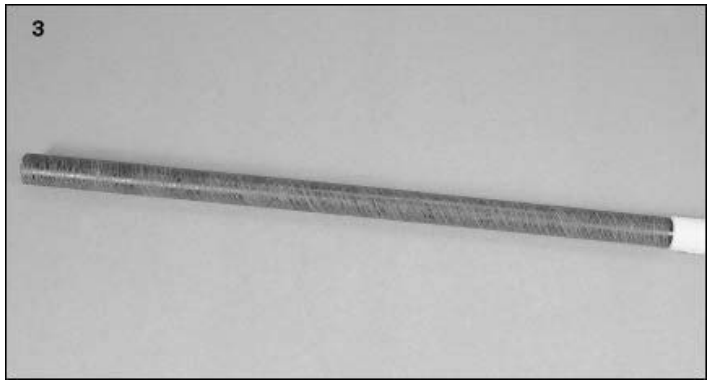



**This is probably the simplest arrangement you can use. It requires only that you fit the components to the blank and glue them in place. You can use this type of setup on most**

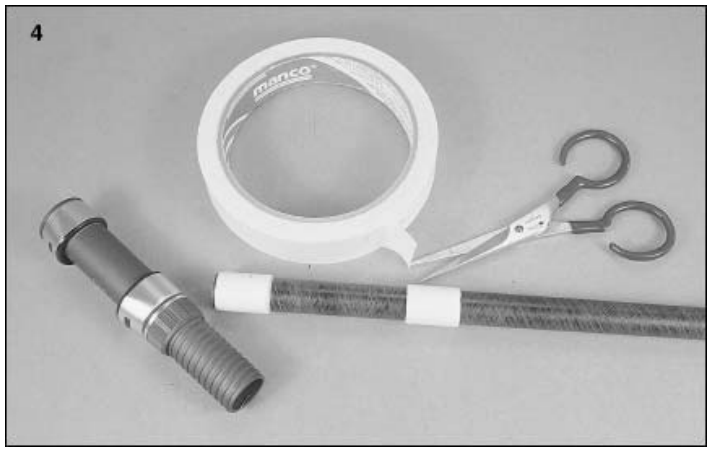
**freshwater rods. Turn the reel seat around and mount it with the fixed hood against the handle, and youâd have a short, built-in fighting butt.**

**Weâre going to use a Fuji graphite reel seat and a reversed half-Wells handle. For the purposes of this demonstration, we could also have picked an all-metal reel seat and another style of grip. The blank happens to be a fiberglass model for a 6-weight line, but it could just as easily be any middle- or heavyweight graphite blank. The spine of the butt section has already been found and marked on a piece of masking tape.**

**Use a band of masking tape to mark off the area of the blank that will be occupied by the reel seat and grip. Note that the bottom end of the reel seat is not even with the butt end of the blank; you must leave room in the end of the seat for the rubber plug. If the blank ran all the way to the end of the reel seat, you wouldnât be able to insert the plug.**




**Wrap a small piece of 100-grit sandpaper around the blank, and twist the blank inside the sandpaper to score the finish. Use light pressure: You want only to roughen the blankâs finish to provide a better glue bond. The ring of masking tape keeps you from scratching the blank above the handle area. Wet a rag or paper towel with rubbing alcohol and clean the scored part of the blank.**




**Two bands of masking tape serve as bushings to center the reel seat on the blank. The distance between the ends of the bushings should be less than the length of the seat; you want the upper end of the reel seat to extend beyond the upper bushing.**

**Test-fit the reel seat over the bushings. The seat should slide into place easily, but it should not be free to wobble. I generally make the bushings too large, and then remove tape a little at a time until the seat fits properly.**

**Wrap the end of the seat with masking tape; this will keep excess epoxy from oozing onto the threads. Mix some of your paste epoxy. Smear the glue onto the bushings and the blank; do not put any inside the reel seat. Use enough epoxy to make the layer of glue between the rings of masking tape even with the outside diameter of the bushings; this will ensure a strong bond between the blank and nearly the entire length of the inside of the seat.**

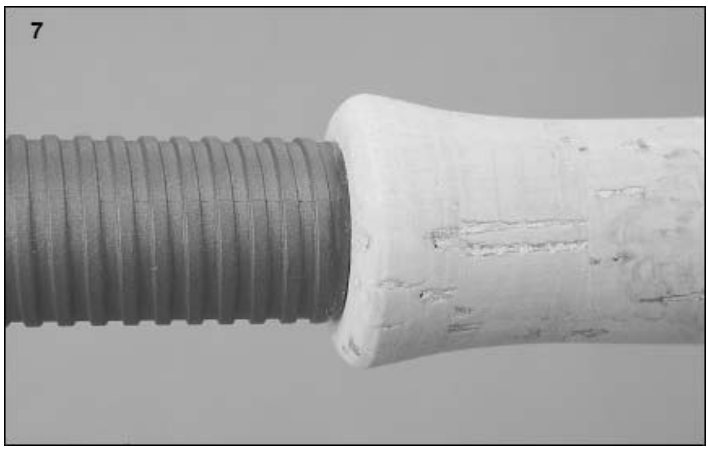
**Slide the reel seat onto the butt end of the blank, twisting it as you go. The seat will push excess epoxy before it; some will ooze onto the masking tape with which you wrapped the front of the seat. Paste epoxy cures very slowly, giving you plenty of working time. Take advantage of this; make sure that the space between the blank and the inside of the seat is filled with glue.**

**Once the seat is in place, remove the protective wrap of tape. If you spot any excess glue on the front of the seat, wipe it off with a clean piece of paper towel. Another**

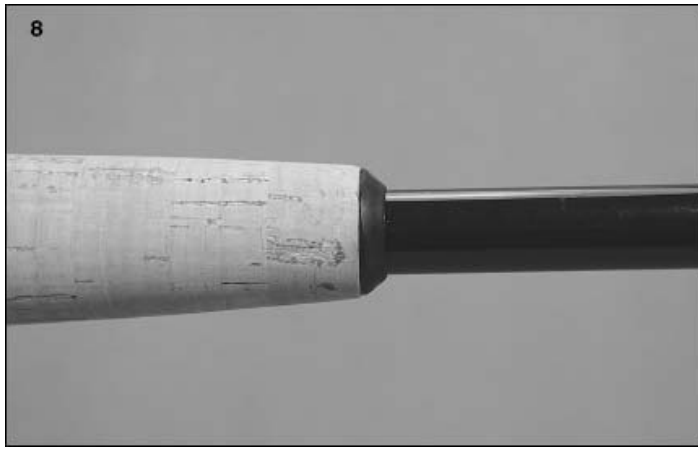
**piece of paper towel moistened with rubbing alcohol will remove the last of the excess glue.**

**While the epoxy is still soft, turn the reel seat until the fixed hood is precisely aligned with the spine of the blankâs butt section. Sight down the section and adjust the seat until the center of the fixed hood lines up with the spine mark. After aligning the seat with the spine, make sure that you havenât moved it too far up or down the blank; check the bottom end to see that you will have room to insert the plug later.**

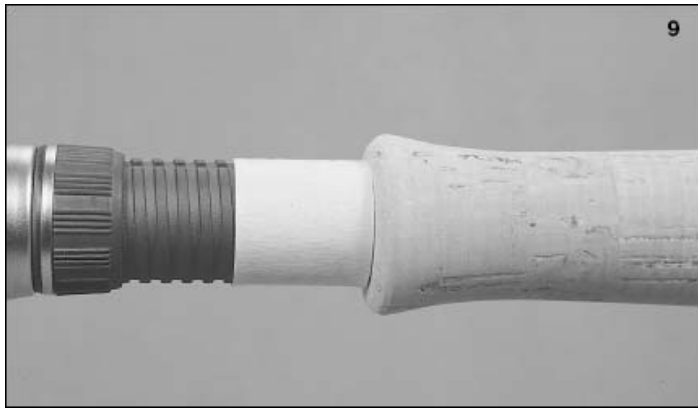
**When youâre satisfied with the position and alignment of the seat, lay the section flat on your workbench, and let the epoxy cure.**




**After the epoxy securing the reel seat has cured, taper-ream the grip to fit the blank. Once you can slide the handle into place, check its fit against the front of the reel seat. If you see a gap on one side, you must sand the bottom of the handle until it fits perfectly against the seat. Most handles require a little sanding on their bottom ends.**



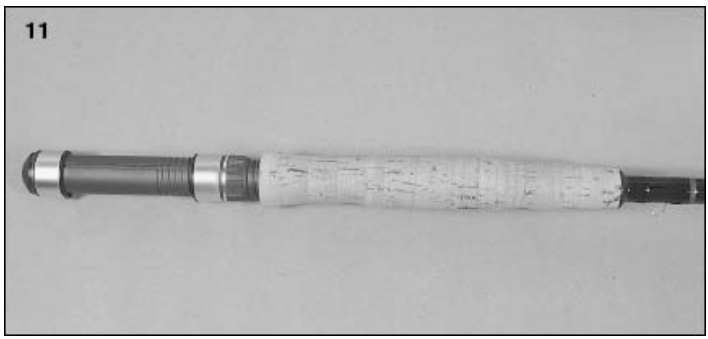

**This rod will get a plastic winding check (a Clemens Dye-Check) I dyed black. Always test the fit of a winding check before gluing the handle to the blank. In this case, the inside diameter of the check was enlarged a little to fit the blank. Then the front of the grip was sanded square. Careful hand-sanding of both winding check and grip produced this nice fit, after which the outermost rim of the check was polished with crocus cloth.**




**Wrap masking tape around the front of the reel seat; this will keep excess glue off the threads. Mix a batch of epoxy. Apply the glue to the scored area of the blank and to about an inch of the blank above the scored area. Slowly slide the handle into place, twisting it as you go. The grip**

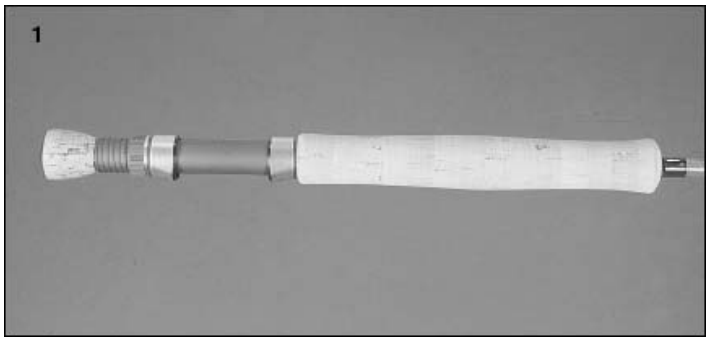
will push a bead of excess epoxy before it; if the blob gets too large, remove it with a small piece of cardboard or folded paper. Remove the masking tape from the reel seat once the handle is in place. Wipe off any excess epoxy with a paper towel moistened with alcoholâand donât forget to clean the blank above the handle. Set the assembly on your workbench to let the epoxy cure.

Glue the plug into the bottom of the reel seat. Apply a thin bead of epoxy to the top of the grip, where the cork meets the blank, and slide the winding check into place. Clean up any excess glue with rubbing alcohol.



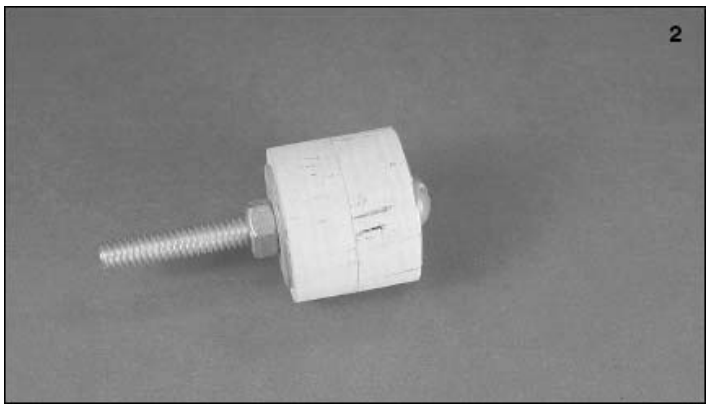

Nothing to it, really. Remember to work slowly and dry-fit each part before applying glue to anything, and youâll have no problems. The same principles will let you mount an all-metal reel seat.

## An Uplocking Seat with a Fixed Fighting Butt




**This next rod has one more part: a homemade, 1-inch fighting butt mounted directly on the blank. The blank is an 8-weight Scott Heliply, a robust graphite model designed for saltwater angling. I gave the rod a Fuji graphite reel seat, but I could just as easily have selected a machined-aluminum model. One reason I chose another Fuji seat is that it gives me an opportunity to show you how to use graphite bushings.**

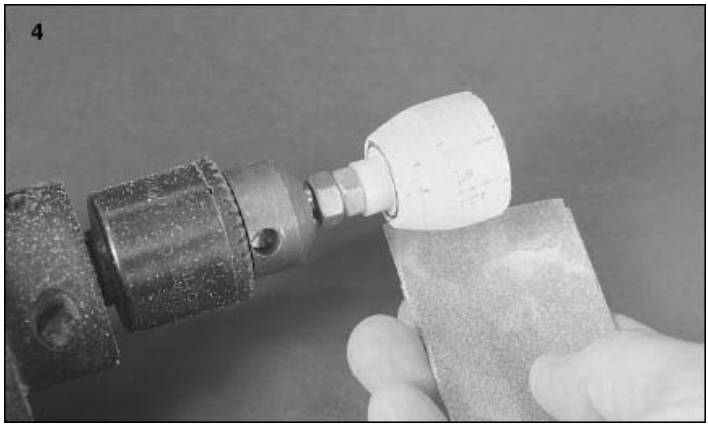
**Most factories and custom rod builders would equip a blank like this with a full-Wells handle. I went with a half-Wells style because the narrower bottom end of a such a grip feels more comfortable to me; the style of handle has nothing to do with how we shall install the grip.**




**Weâll make our fighting butt with two cork rings, available from any rod-building supply house. Each ring**

**has a Â¼-inch hole through its center. A Â¼-inch bolt with matching nuts and washers will serve as a gluing clamp. We want to glue the cork rings to each other but not to the bolt; whenever you apply glue to a cork ring, leave the area around the hole dry. Weatherproof wood glue works fine, as do various cements sold by rod-building outfits. After applying glue to the mating surfaces of the corks, slide them onto the bolt. Screw on a nut to squeeze the rings together. Clamp them tightly: Itâs okay to make a dent on the outside face of each ring. Wipe off any glue that oozes out between the rings. Let the rings sit overnight to give the glue time to dry.**

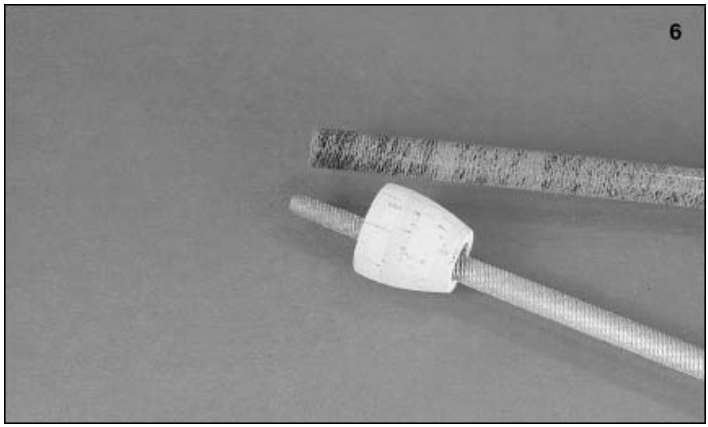
**Remove the glued cork from the bolt. Mark one end of the cork with the approximate outside diameter of the reel seat, and the other end with the diameter of the butt plate you plan to use. Then put the cork back on the bolt, adding a second nut to lock the first. Weâre looking at the end marked with the circumference of the Fuji reel seat.**



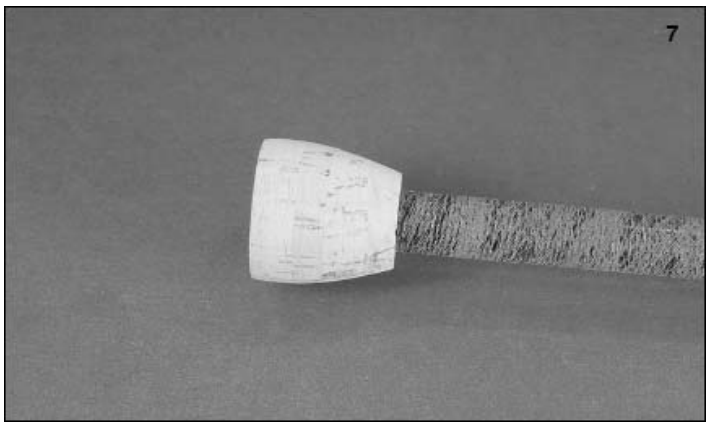

**Chuck the bolt in your electric drill. Run the drill at half speed or higher, and hold a piece of 100-grit sandpaper against the cork. Sand the piece to a tapered shape. Before reaching the final dimensions, switch to 200-grit paper.**

**All that sanding will have uncovered many pits in the cork. Letâs fix them. Mix the cork dust produced by sanding with some waterproof glue such as Loctite Household Cement to make a sticky paste. The top of a 35mm film can makes a handy mixing dish. Use a toothpick to prime the pits in the cork with a little glue, then fill each pit with your glue-and-cork-dust paste. After the paste has cured (setting the piece atop a radiator speeds up the process), sand the patches by hand. Then put the cork piece back in your drill and polish the entire**

surface with 400-grit sandpaper while running the drill at high speed.

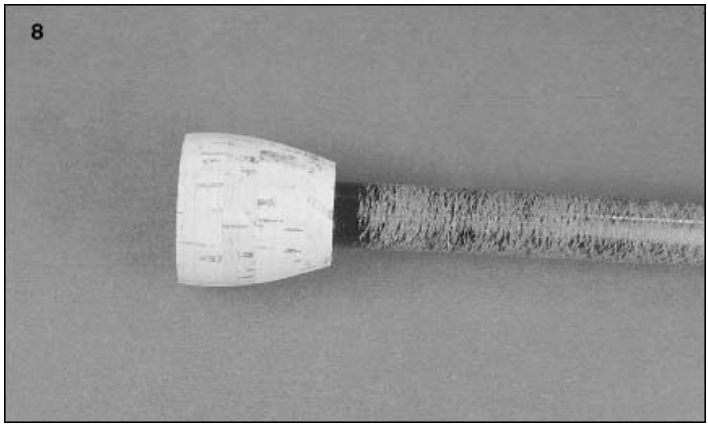



Now you need to fit your homemade fighting butt to the bottom of the rod blank, which has already been scored with sandpaper and cleaned with alcohol. Make the fighting butt fit the blank by carefully enlarging the hole in the corkâs center with a rat-tail file. Work slowly, and do your best to keep the hole centered and straight. This is just like fitting a handle, though in miniature. You need to do this with any on-the-blank fighting butt, whether you buy it or make it.

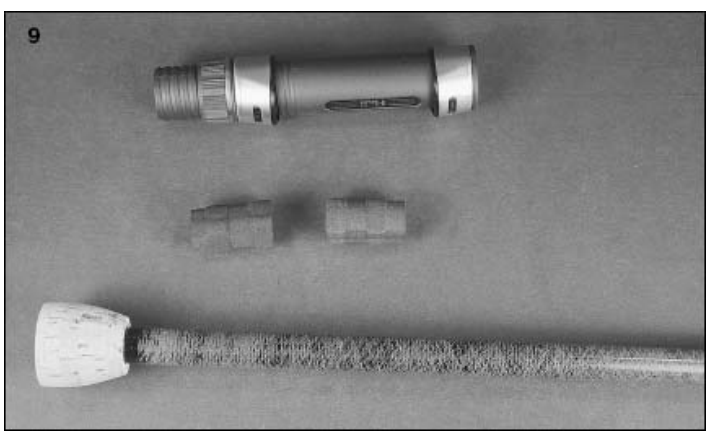



The cork fits when you can slide it to the bottom of the blank. Make sure that none of the blank protrudes from

**the bottom of the cork piece; ideally, the cork should extend beyond the blank by 1/32 inch or so.**

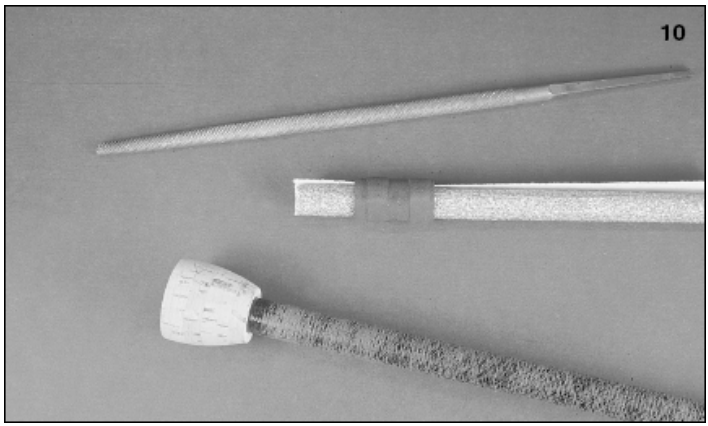



**Make sure that the bottom of the blank is perfectly clean. Mix up a batch of epoxyâfor this job, five-minute epoxy will doâand coat the bottom inch of the blank. Slide the cork onto the wet epoxy, twisting it to distribute the glue along the mating surfaces. Make sure that the bottom of the cork is a hair beyond the end of the blank, and set the assembly aside to let the glue cure.**

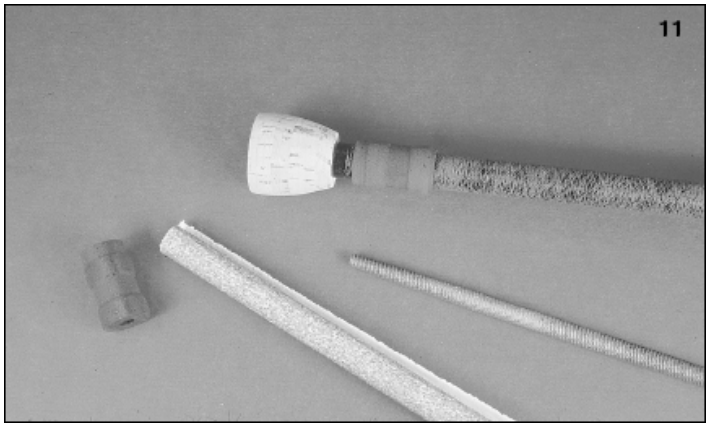



**Now for the reel seat. Weâre using a size 16 Fuji Deluxe model, and weâre going to mount it with graphite bushings (the two objects in the middle), which surely**

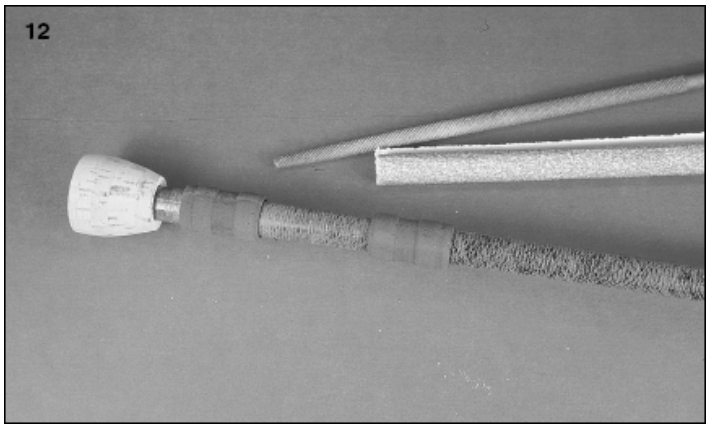
**rank among the greatest inventions of modern man. These bushings are manufactured to fit the inside diameter of the reel seat. All we have to do is enlarge the hole in the center of each bushing to fit the rod blank.**




**Each of these bushings has a .24-inch hole, considerably smaller than the diameter of the blank. No problem; while the material is very strong, it yields easily to a good file or sandpaper. Pick one bushing and mark it with an *L,* for âLower.â A small rat-tail file begins the job of enlarging the hole. Take care to keep the hole straight from end to end, and in the center of the bushing. As soon as you can, switch to a rolled-up piece of 60-grit sandpaper; this goes through the bushing material very quickly. Use the roll of sandpaper as a rasp, sliding and twisting it within the bushing.**

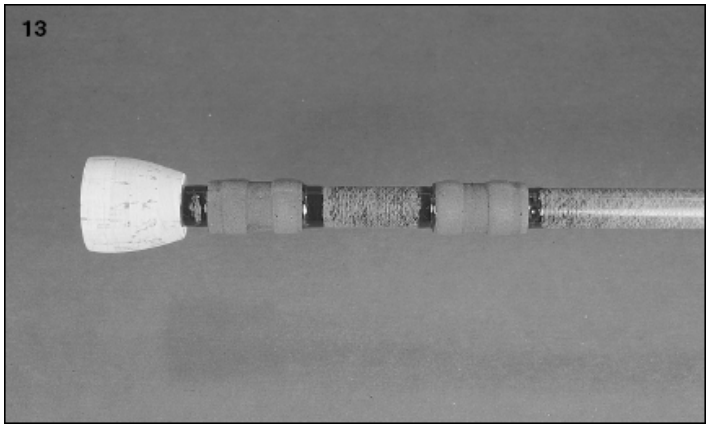



**Pause frequently to test-fit the bushing. It fits properly when you can slide it to within about Â½ inch of the fighting butt. On a rod without a fighting butt, youâd want the bushing to slide to within Â½ inch of the bottom of the blank. Itâs easy to remove too much material, so work slowly and carefully. (Itâs wise to have an extra pair of bushings on hand, in case you make a mistake.)**

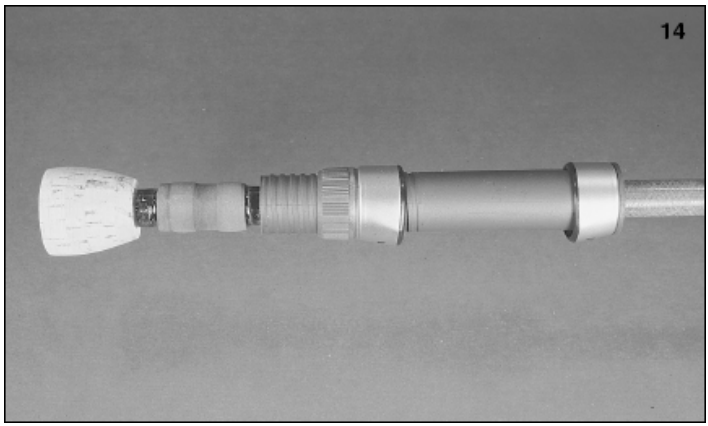



**Now fit the second bushing to the blank, enlarging the hole as you did with the first bushing. Its final position should be about Â½ inch down from upper end of the reel seat; that is, you want about Â½ inch of space inside the end of the reel seat. Itâs not a bad idea to test-fit the seat at this point. If youâve made the hole in either bushing grossly off center, better to find out now, before you glue**

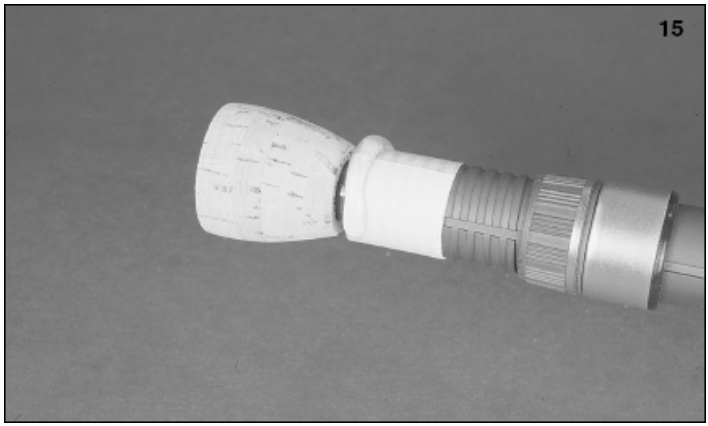
**the parts to the blank.**



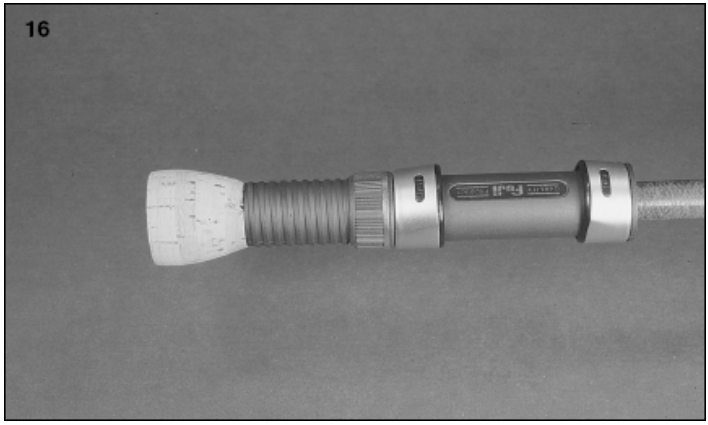

**Once youâre happy with the fit of the bushings, glue them to the blank with Devcon 2-Ton epoxy or a paste epoxy. Note that Iâve left the scored area between the bushings dry. Thatâs because this area will be filled with the next batch of glue, when we mount the reel seat.**



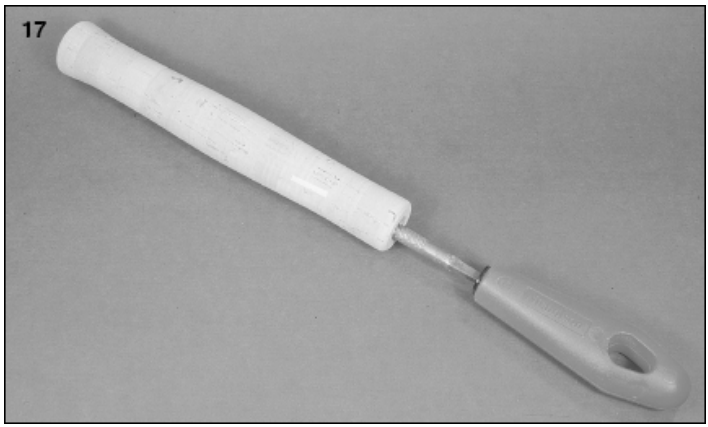

**Let the epoxy cure most of the way, then test-fit the reel seat again. Lightly sanding one or both bushings will correct a minor misfit. Always test-fit rod parts before applying glue to anything.**



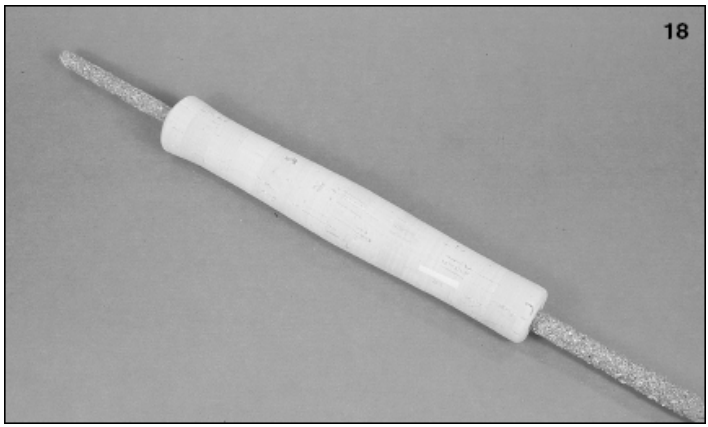

**On this installation, there isnât a great deal of space between the blank and the inside of the reel seat, and you can use either a paste epoxy or Devcon 2-Ton; you will probably find paste epoxy easier to use. First, though, wrap the bottom of the reel seat with masking tape. Mix a large batch of glue. Apply the epoxy to both bushings and to the space between them, forming a solid cylinder of adhesive. Put a little glue on the blank above the upper bushing and a little more below the lower bushing. Slide the reel seat into place. The wrap of masking tape will catch the excess glue that oozes out. When the reel seat reaches this point, just a little above the fighting butt, carefully remove the wrap of masking tape. Slide the reel seat down the rest of the way.**



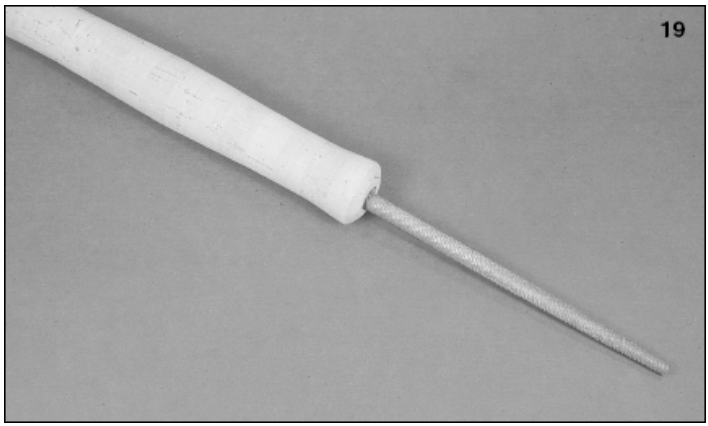
**Use a rag wetted with alcohol to clean up any excess epoxy where the reel seat meets the fighting butt. Make sure that the hoods of the reel seat are aligned with the spine mark on the butt section of the blank. (If you donât know what the spine is, refer to chapter 2.) Aligning this seat is easy: The manufacturerâs name is in exactly the right spot for you to simply line up the label with the spine mark on the blank. Set the assembly aside to let the glue cure.**



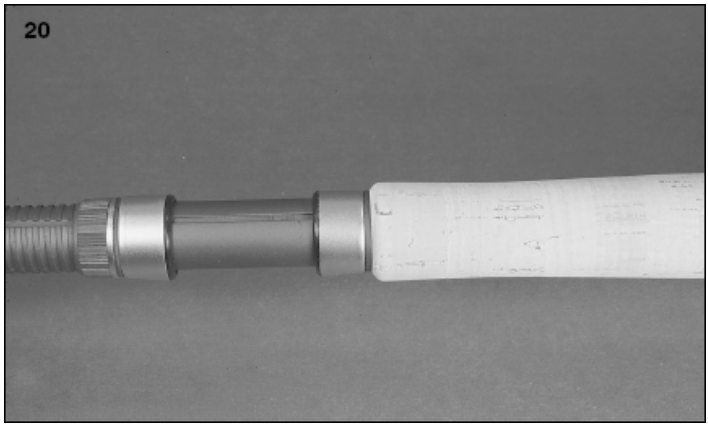

**While the reel-seat epoxy is curing, you can get to work on the handle. Start enlarging the hole from the bottom end with a rat-tail file. Make five or six strokes in one spot, rotate the handle about an eighth of a turn, make another five or six strokes, rotate the handle again, and so on. A sliver of masking tape serves as an index mark to let you see how far youâve turned the handle. Work carefully and use light pressure on the fileâyou donât want to make the hole off center.**



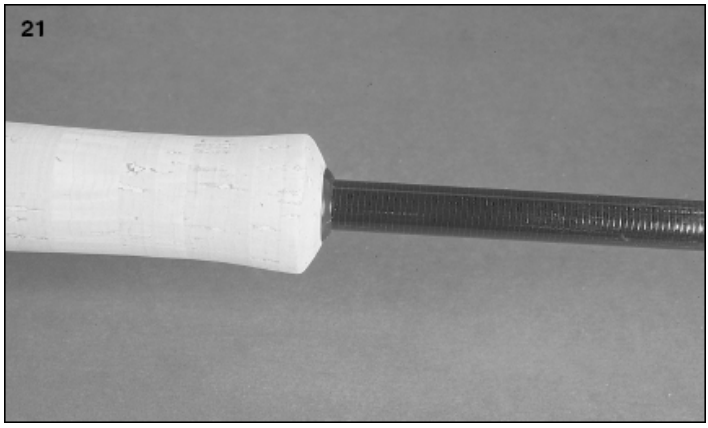

**This blank has a fairly thick butt, so you have to enlarge the hole in the handle quite a bit. A tapered reamer made especially for the purpose speeds up the job. Most rod-building catalog houses sell such tools, which are worth every penny they cost. Pause frequently to test-fit the handle on the blank. You can always remove more cork, but you canât put any back.**




**Use the fat end of your rat-tail file for the final fitting, cutting cork on the draw stroke. More often than not, the final fitting involves removing material deep inside the grip, and not from either end of the hole. A little patience will ensure a perfect fit.**

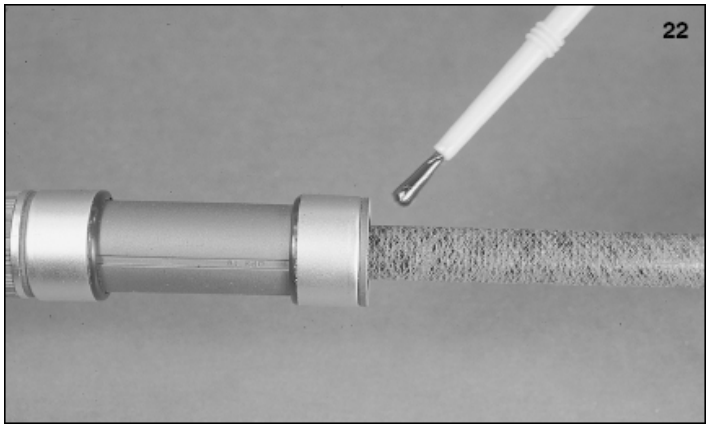



**Once you can slide the grip into position, check how the bottom end fits against the reel seat. If you spot a gap anywhere, lap the bottom of the grip on a piece of fine sandpaper until it fits perfectly against the reel seat. On this half-Wells grip, I carefully hand-sanded a bevel so that the bottom of the handle tapers down to the outside of the reel seat. Itâs not just an aesthetic touch; I also got rid of a sharp corner that would have chipped in the field.**

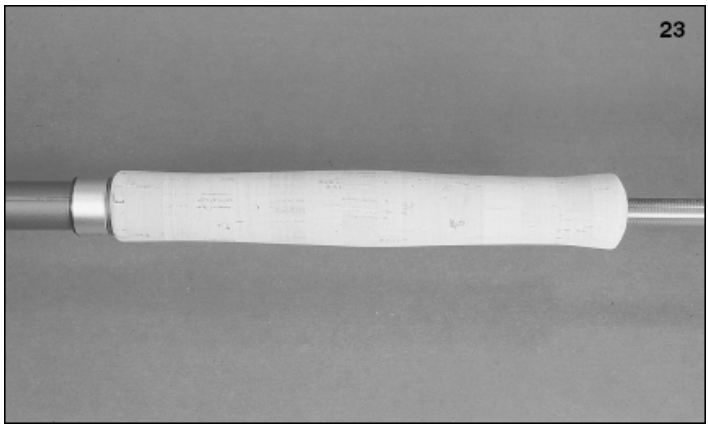



**While youâre at it, see how the winding check fits against the top end of the handle. Carefully lapping this grip on fine sandpaper produced a flat surface for the winding check. Note how the angle of the cork and the angle of the winding check are the same, making for an unbroken, straight line from grip to blank. Little details like this take**

only a minute, but they make a rod look nicer.

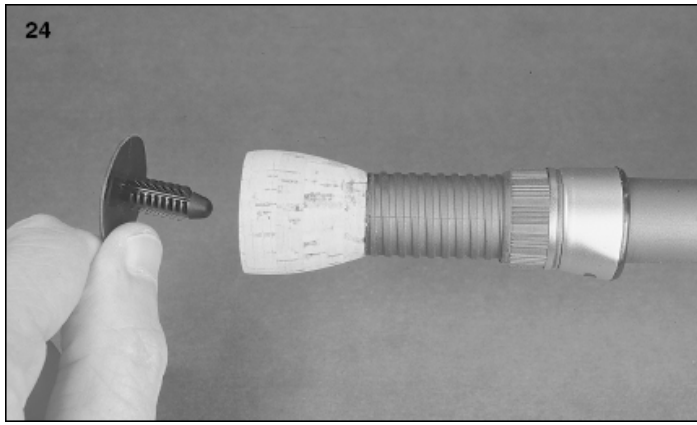



Happy with the fit of the handle? Mix up another load of epoxy. For the grip, you can use Devcon 2-Ton. With a disposable brush, paint a thin film of epoxy on the front surface of the reel seat.

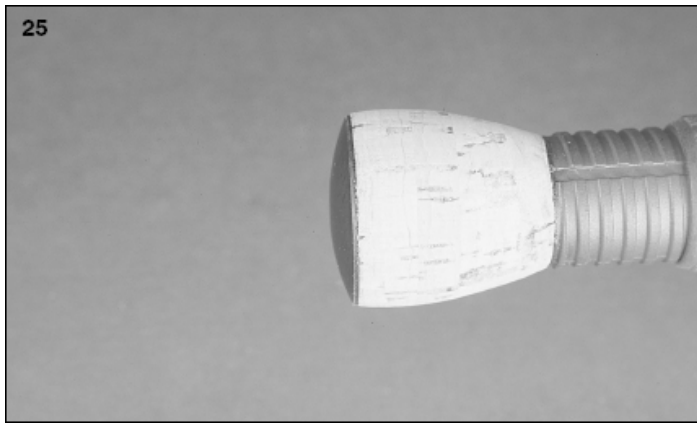



Apply a thick coat of epoxy to the area of the blank that the handle will occupy, plus another inch above the handle area. Slide the handle into place, twisting as you go to distribute glue on the mating surfaces. Scrape off excess epoxy as necessary, using a small piece of folded paper as a spatula. Bottom the grip against the reel seat. Clean up any extra glue along the seam with a rag

**moistened with alcohol.**

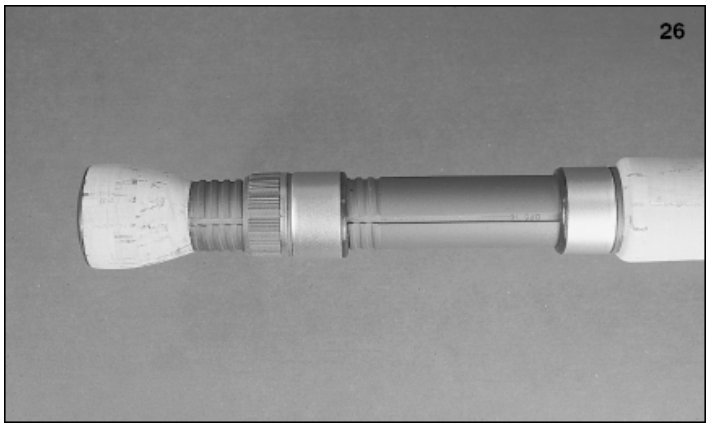



**Supply houses sell a variety of butt caps made of plastic, hard rubber, aluminum, and nickel silver. The metal caps can be engraved by a jeweler. In keeping with our homemade theme, and because Iâm a cheapskate, weâre using a plastic dashboard-component fastener from the local hardware store. It cost less than half a dollar, but, as near as I can tell, itâs identical to the butt cap on an expensive factory rod I used to own.**

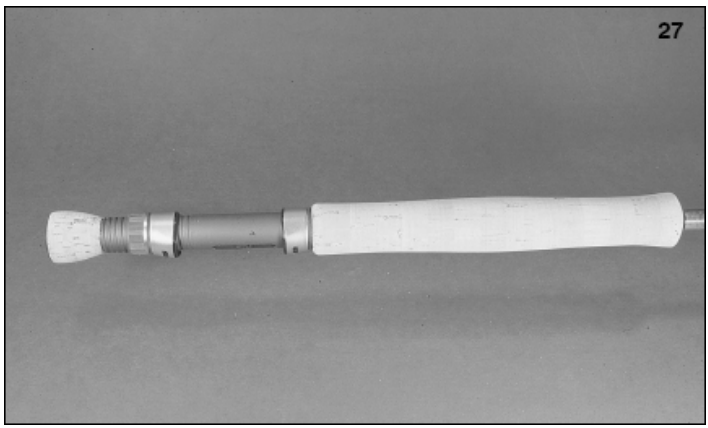



**A thin layer of epoxy secures the plastic cap to the cork fighting butt. Twist the cap as you slide it into place to distribute glue on both mating surfaces. A little glue will probably ooze out of the seam; wipe it off with a paper**

**towel or rag moistened with alcohol. Note how neatly the cap fits the cork, and how the cork tapers down to the meet the reel seat. None of it took any talent or fancy tools, and the entire fighting butt cost under two bucks.**

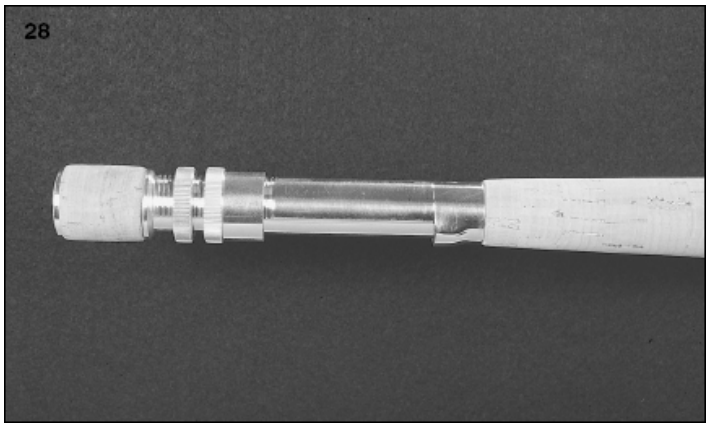



**Maybe this setup wonât win any beauty prizes, but all the parts fit perfectly. Itâs a tough, lightweight, simple, corrosion-proof arrangement that set me back about $25 for everything. If you want a more elegant rig, buy better cork and a machined-aluminum reel seat; it would go together exactly like this one did.**



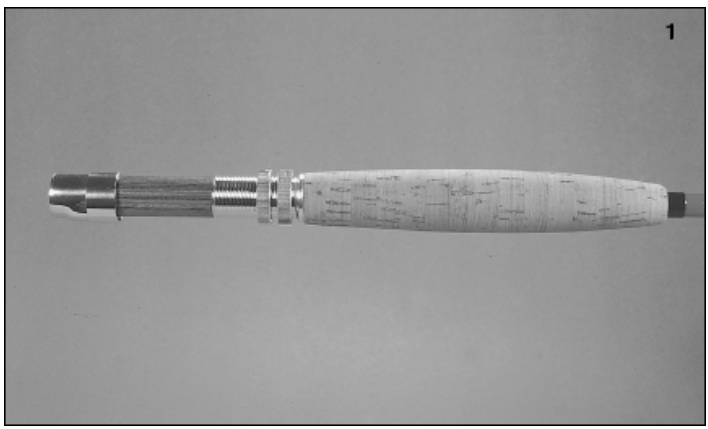

**Hereâs the entire assembly, lacking only a decorative wrap above the winding check. (I donât like hook keepers**

on saltwater rods.) Later, the fighting butt will get a coat of cork sealant to keep it from chipping during the many battles with sea monsters that I hope this rod helps me to catch.




Hereâs a similar arrangement on a rod built by my friend and colleague John Likakis. John used a Clemens Custom Tackle aluminum seat, which he mounted uplocking. Note how the grip tapers to meet the fixed hood of the seat. On his rod, John used an elegant aluminum butt plate on the homemade fighting butt.

### A Downlocking Skeleton Seat

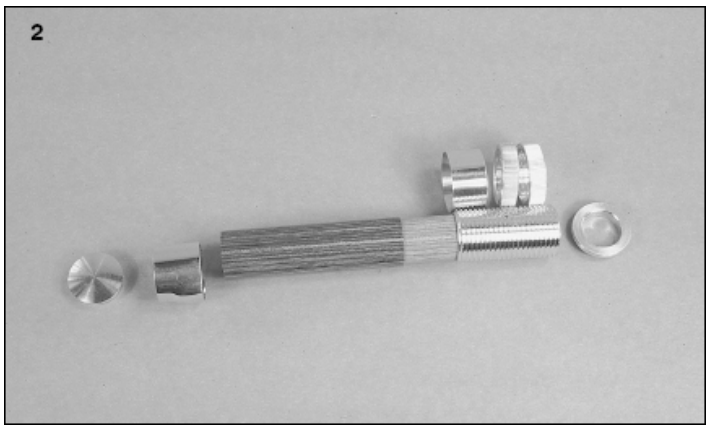



I enjoy short rods for 4- and 5-weight lines. In fact, I

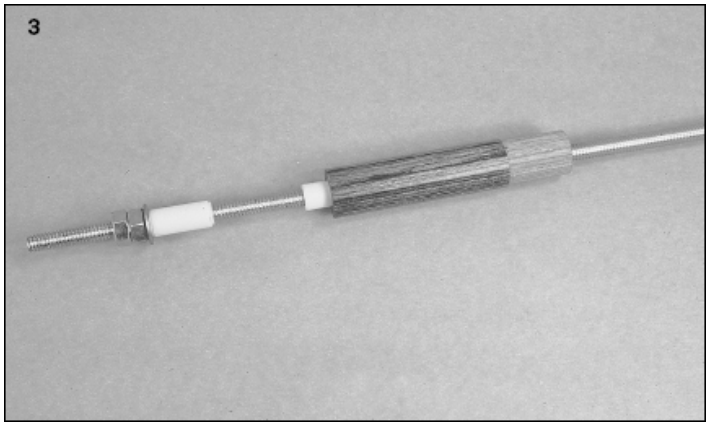
**usually prefer a 7- or 7Â½-footer to a longer rod; I cast very well with the little sticks, and I enjoy playing a fish on a short, lively fly rod. I already had several little rods, but I wanted a limber, fast- to medium-action rod between 7 and 7Â½ feet long, for a 4- or 5-weight line.**

**After a little research, I settled on a fiberglass blankâa 7Â½-footer for a 4-weight line. The rod seemed a bit softer in the tip than I wanted, so I trimmed 2 inches from each end, ending up with a 7-foot, 2-inch stick that handles a 4-weight line with aplomb, yet retains the soft, lazy fiberglass feel I enjoy so much. A line cannon it ainât, but it is a delightful, accurate trout and panfish rod that weighs no more than a graphite model.**

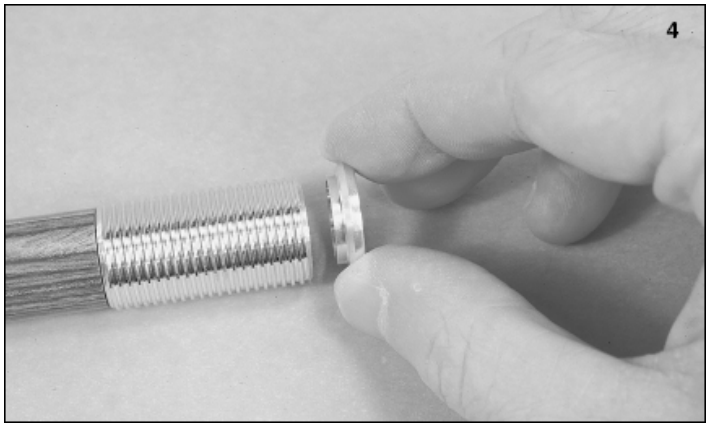
**Stylish fittings seemed appropriate for this rod, so I ordered a machined-aluminum skeleton seat from Dale Clemens, a resin-impregnated walnut insert, and an optional finishing ring to go between the seat and grip. The Clemens seat can be mounted uplocking or downlocking; I decided to go with a traditional downlocking arrangement. My parts box contained an old, fairly chubby cigar-shaped grip. I mounted the grip on a threaded rod, chucked the end of the rod in my drill, and reshaped the handle with several grades of sandpaper, giving it a slender, comfortable taper that fits my hand and the finishing ring on the reel seat. Itâs a handsome, graceful little rod, and the entire project set me back less than a C-note.**



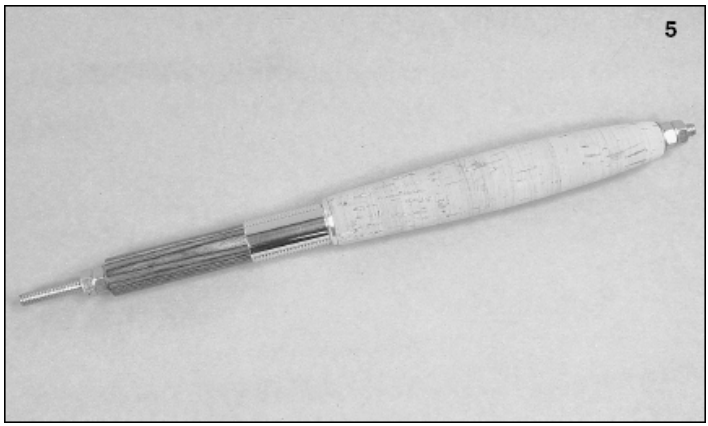
**The Clemens skeleton seat, like many other models, came unassembled. From left to right, the parts are the butt cap, the fixed hood, the walnut insert, the threaded barrel, and the optional finishing ring. Above the threaded barrel are the sliding hood and the nuts that hold it in place. Note that the insert has a âstepâ on one end, where it was turned down to accept the threaded barrel.**



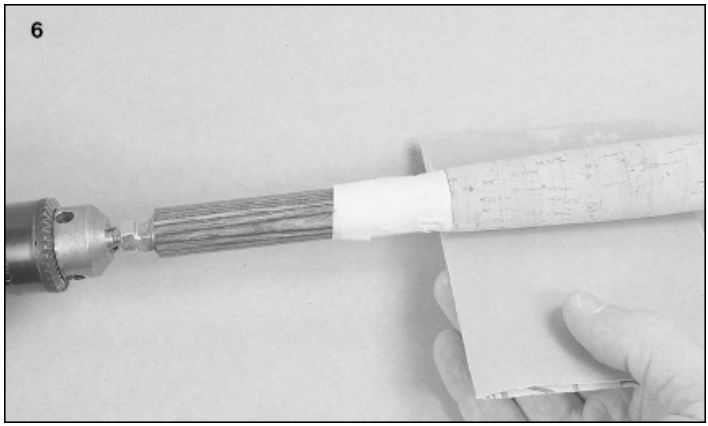

**I wanted the bottom end of the grip to fit perfectly against the finishing ring, creating a smooth transition from cork to metal. To make it fit, I had to sand down the grip to the diameter of the finishing ring. My trusty Â¼-inch threaded rod was pressed into service as a spindle on which I could turn the cork to the dimensions I required. The walnut insert had an inside diameter of 3/8 inch, but a pair of masking-tape bushings centered it on the threaded rod.**



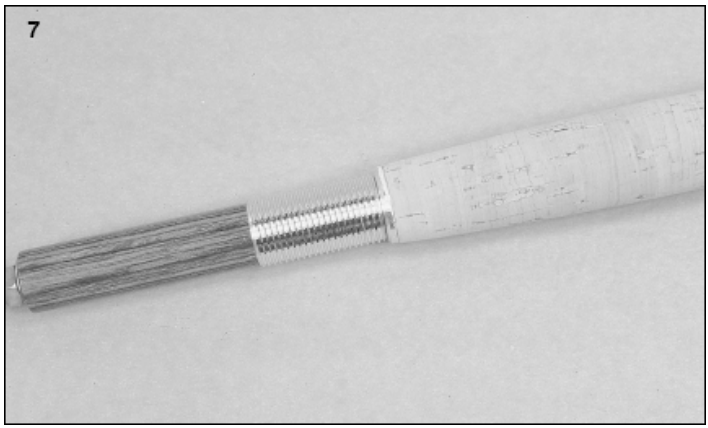

**After fitting the wood insert on the threaded rod, I slipped the threaded barrel onto the insert, and then snapped the finishing ring into the end of the threaded barrel. None of the parts has been glued; the time for adhesive comes later.**



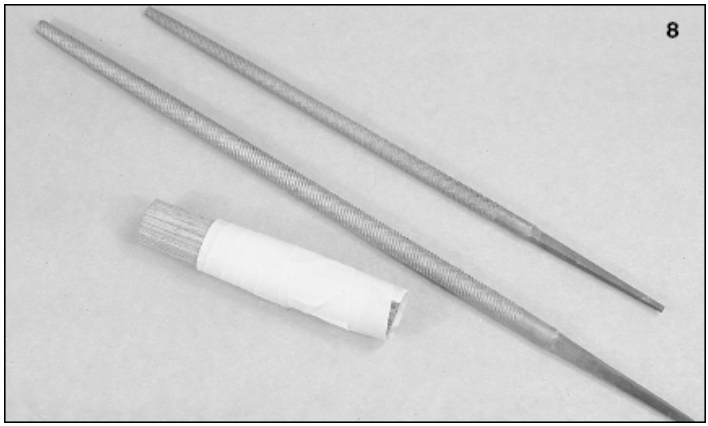

**Then I slipped the grip onto the threaded rod, and secured it with a washer and a pair of nuts. If you look closely, youâll see that the bottom end of the handle is a tad wider than the finishing ring; the fit is pretty good, but not perfect.**



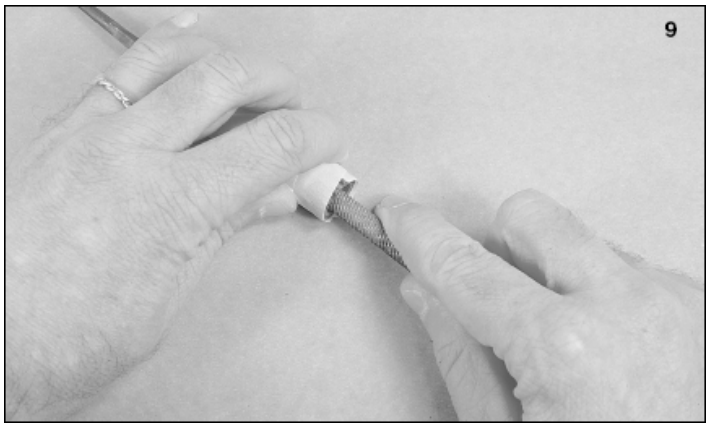

**Into the drill chuck went the threaded rod. A wrap of masking tape protected the metal parts while I sanded down the handle. Since I wanted to remove only a tiny amount of cork, I did the whole job with 400-grit paper, running the drill at high speed and pressing the sandpaper very gently against the grip.**




**After the sandpaper treatment, the grip flows perfectly into the finishing ring. You can use this method to reshape nearly any grip so that it tapers down to the diameter of a reel seat. Remember to use a light touch with the sandpaper, to run your drill at half speed or more, and to protect the metal parts with a wrap of masking tape. (A little cigarette-lighter fluid removed the residue left by the tape on my reel seatâs brightwork.)**

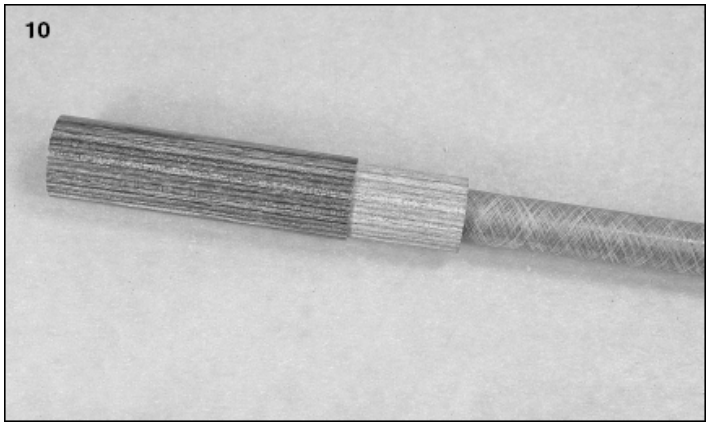



**Now itâs time to fit the wood insert to the blank. Since this fiberglass blank is a little wider than the inside diameter of the insert, you have to open up the hole in the center of the wood. Wrapping the insert with masking tape protects its polished finish while you enlarge its hole.**

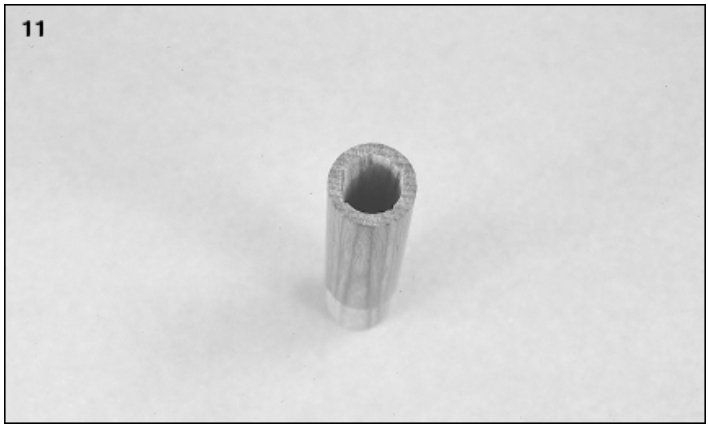



**Although impregnated wood is considerably harder than cork, it still succumbs to a good rat-tail file. If you need to open up a wood insert, do it just as you would fit a handle to the blank: Hold the insert flat on your workbench, and use the fat end of the file, cutting on the draw stroke and turning the insert after every few strokes. Work carefully, checking the hole often for size and roundness. I donât have to tell you to work slowly, since filing an impregnated insert will teach you the meaning of**

*hardwood.* Brass would be no more difficult to file.

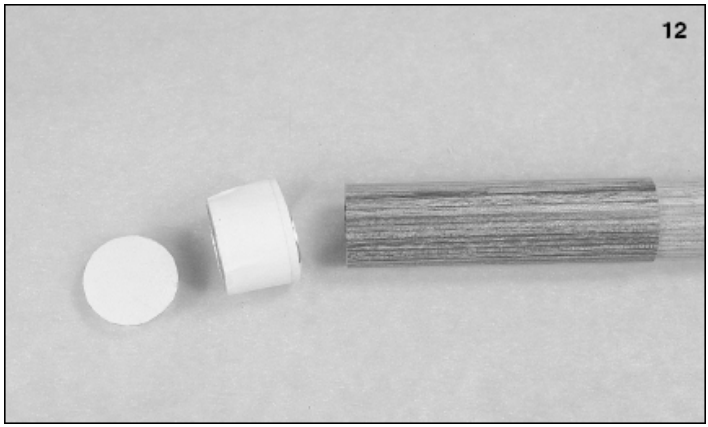



After the application of a good deal of elbow grease, the insert fits the blank. The bottom end of the blank has already been roughened with 100-grit sandpaper. The spine, of course, has been marked on a ring of masking tape at the middle of the section.

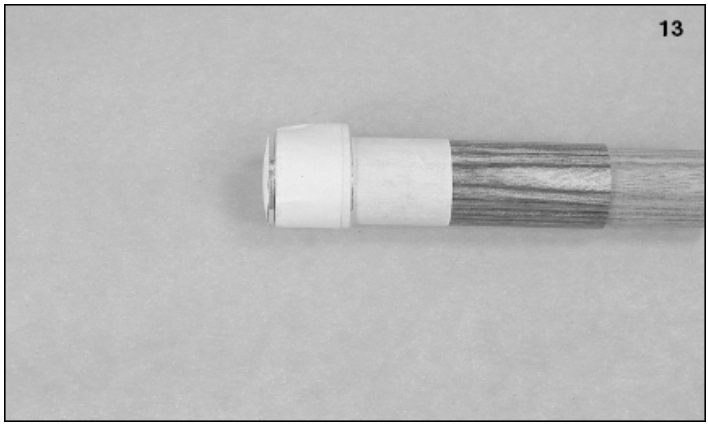



To ensure good distribution of glue inside the wood, use a small triangular file to make several shallow grooves inside the hole. The grooves will allow glue to ooze from one end of the insert to the other as you slide the seat onto the blank. This step isnât absolutely essential, but I recommend it. Any thin, triangular file will get the job

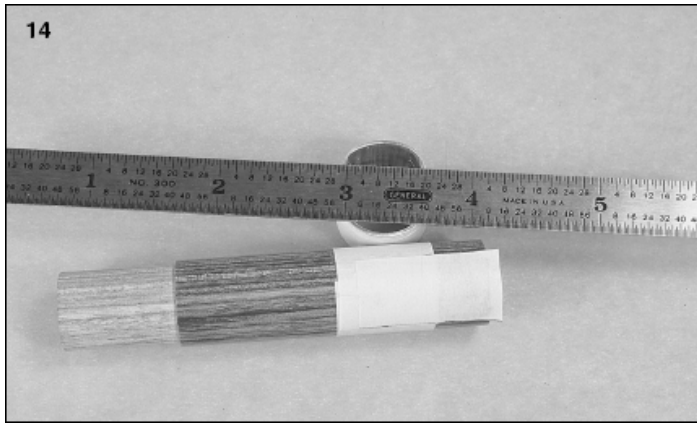
**done.**



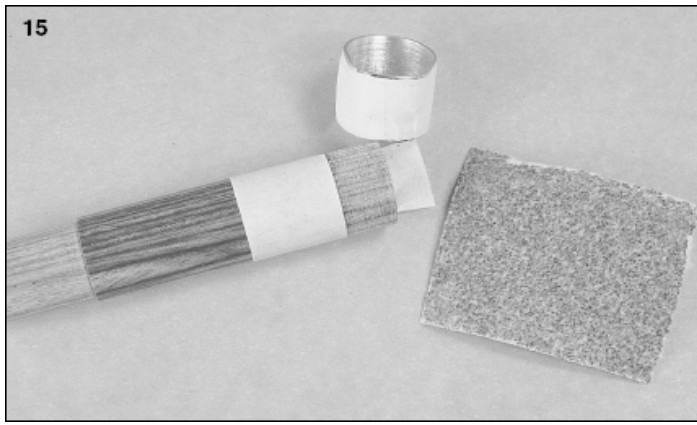

**Before gluing anything to the blank, however, you have to assemble most of the reel seat. Masking tape protects the polished finish of the fixed hood and butt cap while you handle them. Both parts, of course, will take a beating when I go fishing, but I hate to take a chance on scratching the brightwork while I build a rod.**




**Hereâs how to mark how much space the fixed hood will occupy on the insert. Snap (do not glue) the butt cap into the hood. Then slide the hood onto the insert as far as it will go. Wrap a piece of masking tape around the insert right at the end of the metal hood.**

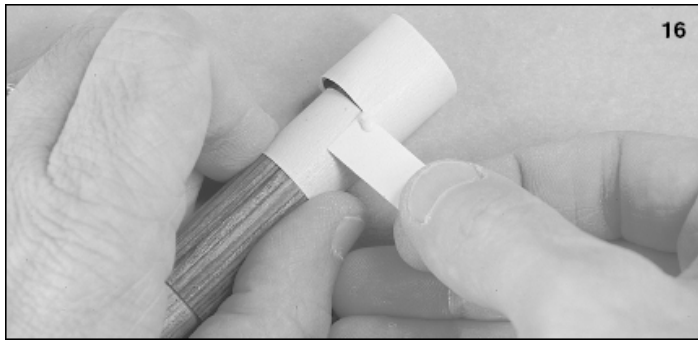



**You want a strong, solid glue bond between the fixed hood and the wood insert, but you donât want any epoxy inside the pocket that holds the reel foot. Therefore, you have to mark an area to which you will not apply glue. An easy way to do this is to measure the inside width of the pocket, cut a piece of masking tape to that dimension, and stick the tape to the insert. The exposed wood on the end of the insert will receive glue; the spot occupied by masking tape will not.**

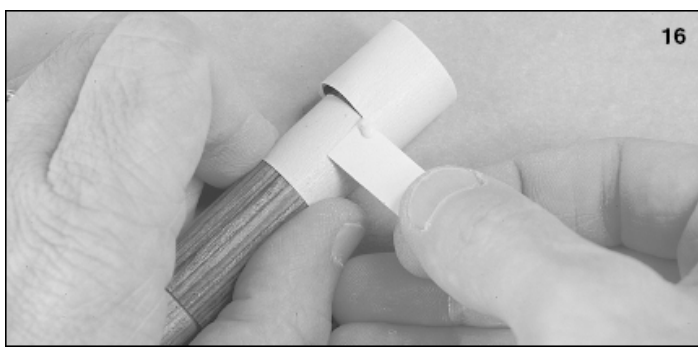



**Since glue sticks best to rough surfaces, use a small piece of coarse sandpaper to put some âtoothâ on the end of the wood insert and the inside of the hood. Obviously, thereâs no need to roughen the inside of the pocket, since it will not receive any glue. After roughening the parts, clean**

them with alcohol.

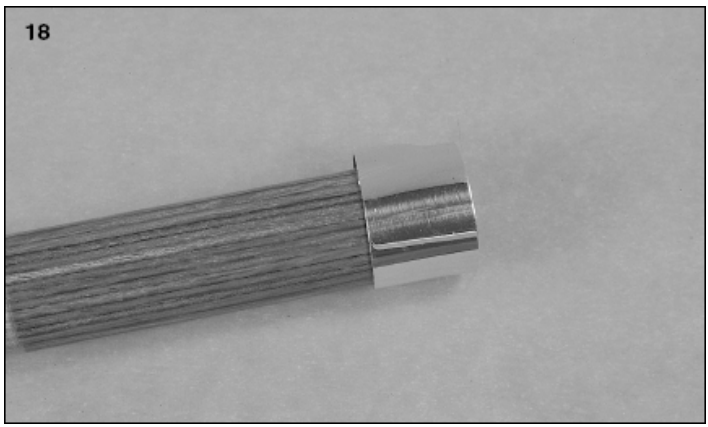



The hood is secured to the insert with the same paste epoxy used to fasten reel seats to blanks. Apply a thin layer of glue to the roughened area of the reel seat, and an even smaller amount to the inside of the front edge of the hood. Remove the strip of masking tape that marks the location of the pocket on the insert. Slide the hood onto the insert, making sure that the pocket goes over the spot to which you didnât apply glue. A little excess glue will ooze out of the front of the hood. A small piece of paper, folded several times to make it stiffer, makes a handy, disposable spatula with which to scrape off excess glue.

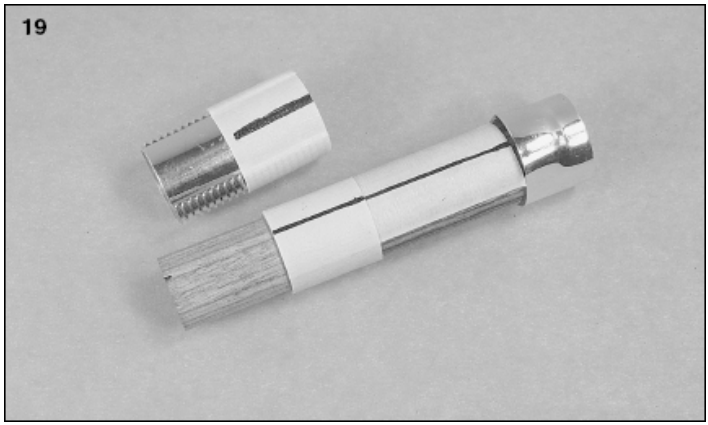



The band of masking tape on the insert keeps the hood from sliding too far forward. This is important, because you must leave room for the butt cap. A toothpick can be used to remove excess glue from the bottom end of the hood. Clean this area thoroughly, or you wonât be able to

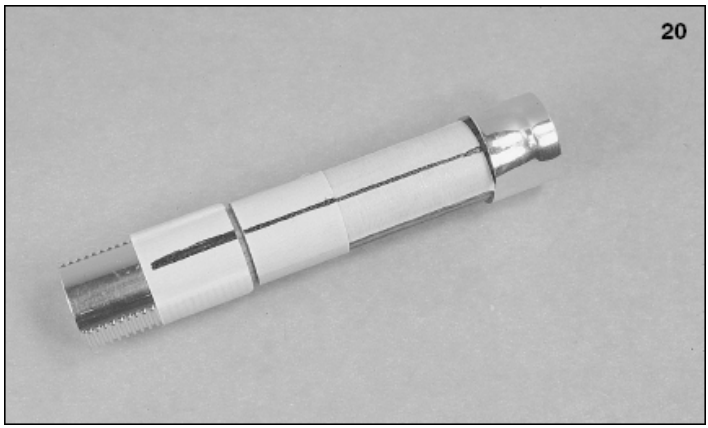
**install the butt cap later. Why not glue in the butt cap now? If you do, you will make a cylinder with a closed end. When you mount the reel seat on the blank, air will be trapped and compressed inside the cylinder. You will push the reel seat into place, let go, and the compressed air will push it back toward the bottom end of the blank. But the seat will slide out of position so slowly that you might not notice the problem until the epoxy is too stiff for you to do anything about it. That has nearly happened to me. And so I always mount the butt cap last.**




**Carefully remove the masking tape from the insert and the hood. Try not to disturb the location or alignment of the hood. Check to make sure that the pocket is aligned with the dry area on the end of the insert, and that the bottom end of the hood still has room for the butt cap. A rag or paper towel moistened with alcohol will remove the last of the excess epoxy. Lay the assembly on your bench to let the glue cure.**

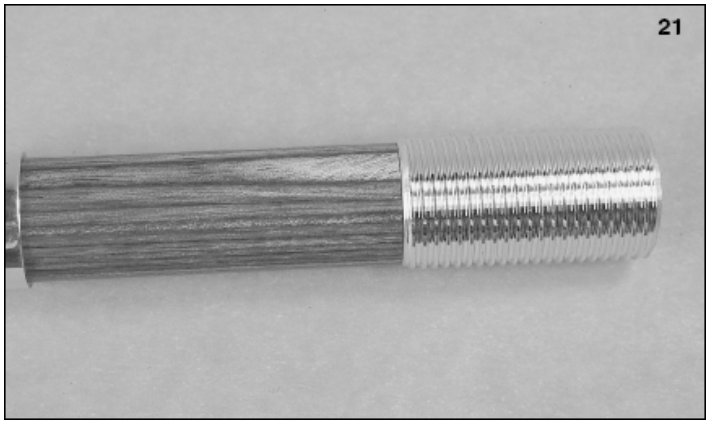



**The threaded barrel has a milled slot for the reel foot. This slot must be perfectly aligned with the fixed hood on the end of the seat. Mark the center of the fixed hood on masking tape stuck to the wood insert. Stick another piece of tape on the threaded barrel, and mark the center of the milled slot on it. Now you have index marks that will let you align the parts.**

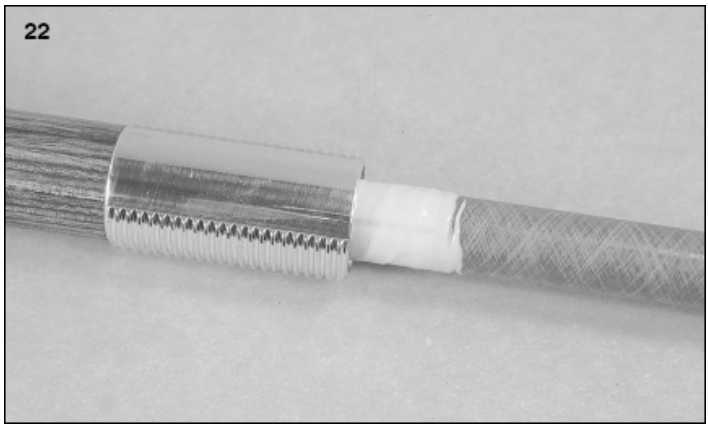



**Spread a thin film of paste epoxy on the stepped-down area of the insert, and smear a little glue inside the threaded barrel. Slide the barrel onto the wood, twisting it as you go to distribute the epoxy over both mating surfaces. As a blob of excess glue forms, scrape it off with a small piece of paper. Align the index marks on the masking tape, and slide the barrel all the way onto the**

**wood.**

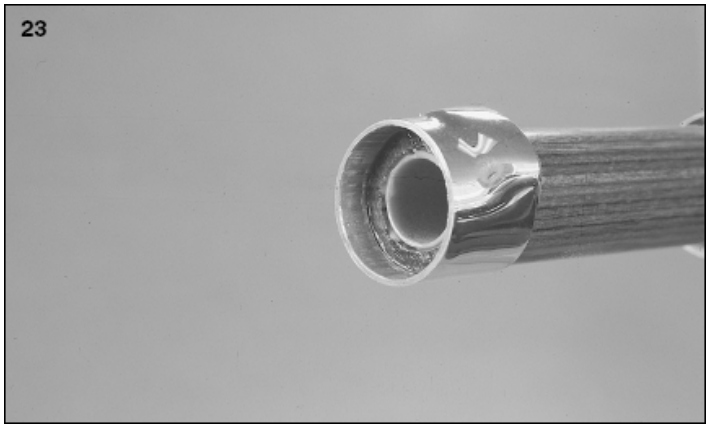



**Let the epoxy cure about halfway, then remove the masking tape from the insert and the threaded barrel, taking care not to disturb the alignment of the parts. Since the glue is not yet fully cured, any excess can be removed with alcohol. Set the assembly aside to let the glue cure all the way.**

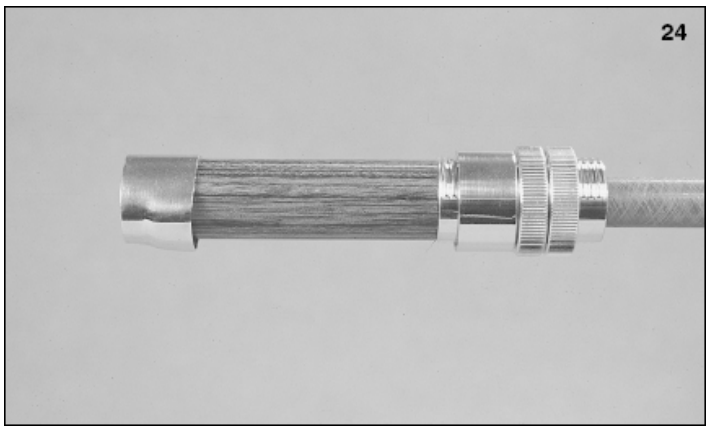



**Test-fit the insert on the blank one last time. If itâs loose on either end, use a single wrap of masking tape on the blankâa mini-bushing, as it wereâto take up the space. Mix up a fresh batch of paste epoxy and smear a layer on the bottom end of the blank. Slide the reel seat into place, twisting it to spread the epoxy over both mating surfaces.**

**When you glue the seat on the blank, donât forget to align it with the spine mark.**

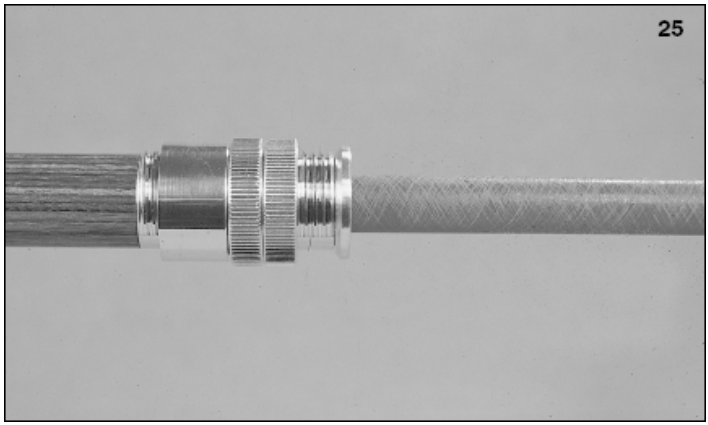



**The blank goes to the bottom of the wood insert, *not* to the bottom of the metal hood. If the blank protrudes beyond the wood, you wonât be able to mount the butt cap. When youâre happy with the position and alignment of the reel seat, lay the assembly on your bench to let the epoxy harden.**

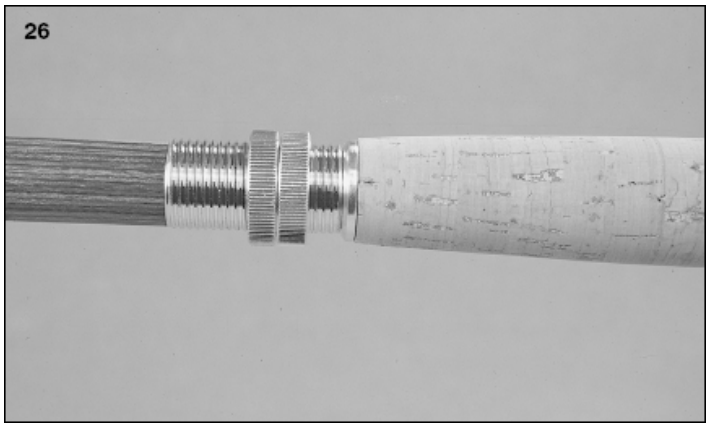



**Donât forget to install the rest of the hardware on the reel seat. Iâve heard of guys gluing handles on rods and then discovering, too late, that they had forgotten to install the sliding hood and nuts on the reel seat. Make sure that the**

**sliding hood faces in the correct direction.**

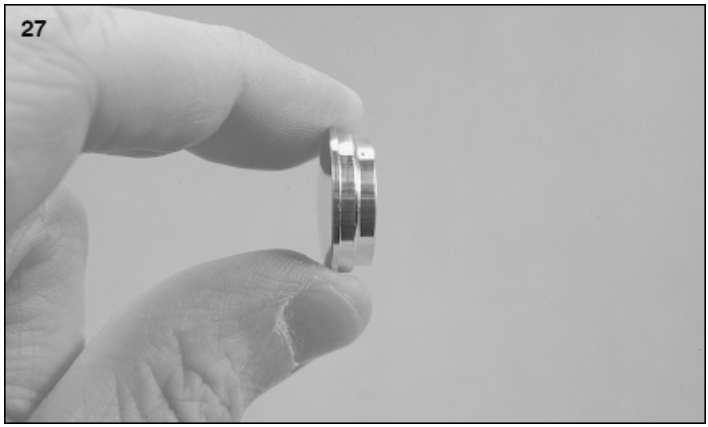



**Mix up a small batch of epoxy, smear a thin bead of it inside the front of the reel seat, and then snap the finishing ring into place. Some reel seats have this part; some donât. If itâs offered as an option, get it; the finishing ring makes for a nice transition from metal to cork.**

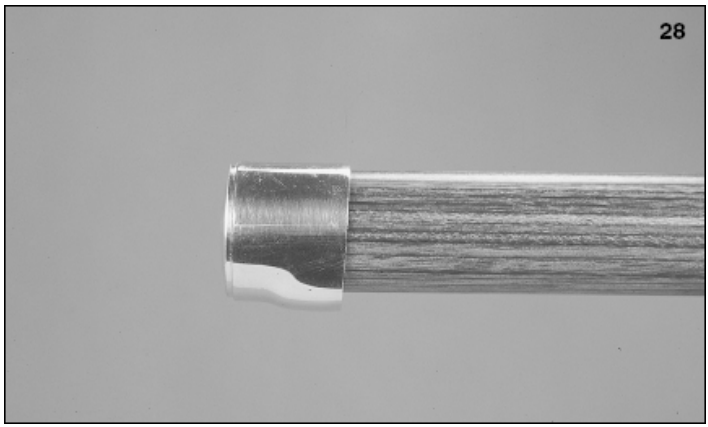



**Taper-ream the grip to fit the blank. Check its fit against the finishing ring; small adjustments are easily made with fine sandpaper. When you apply glue to the blank, smear a thin film of epoxy on the face of the finishing ring. After seating the handle, twist it a little to distribute the glue**

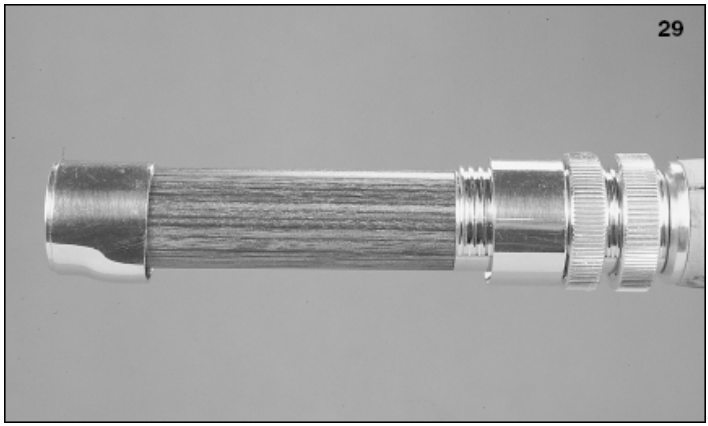
between the finishing ring and the bottom of the handle. Clean up any excess glue with alcohol.



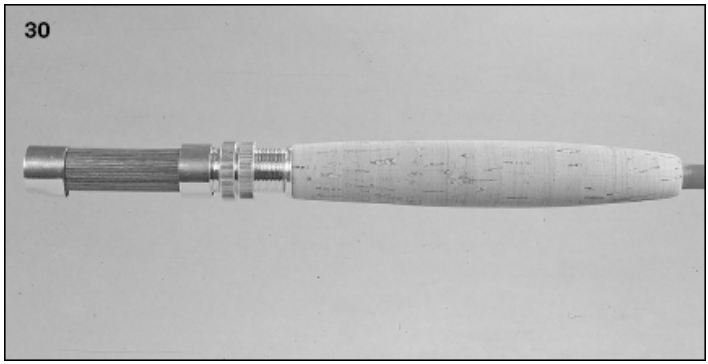

Clean the butt cap with alcohol before cementing it into the reel seat. Oil from your skin can interfere with the glue bond.




Smear a little epoxy inside the bottom of the reel seat. Snap the butt cap into place, and clean up any excess glue that oozes out of the seam.

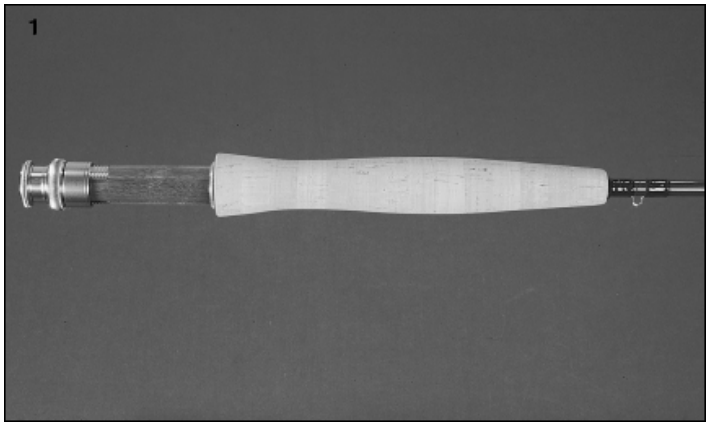



**Hereâs the bottom end of the finished assembly. No gaps, no glue lines, no corners or bulges where one part meets another.**

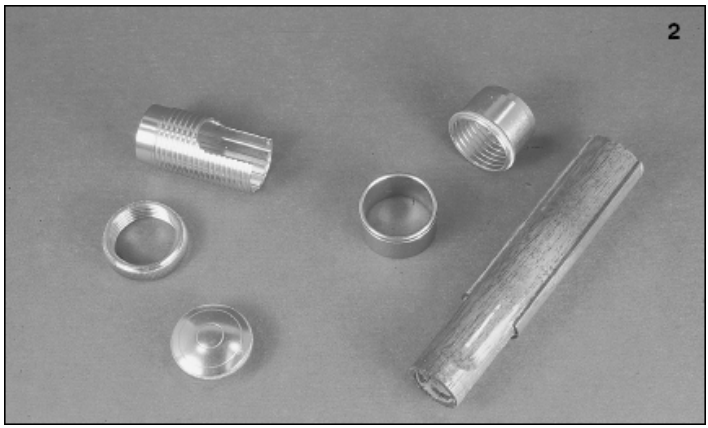



**I like the traditional looks of this arrangement very much. The handle and reel seat seem all of a piece. A winding check seemed superfluous, so I skipped it.**

**An Uplocking Skeleton Seat with a Recessed Grip**

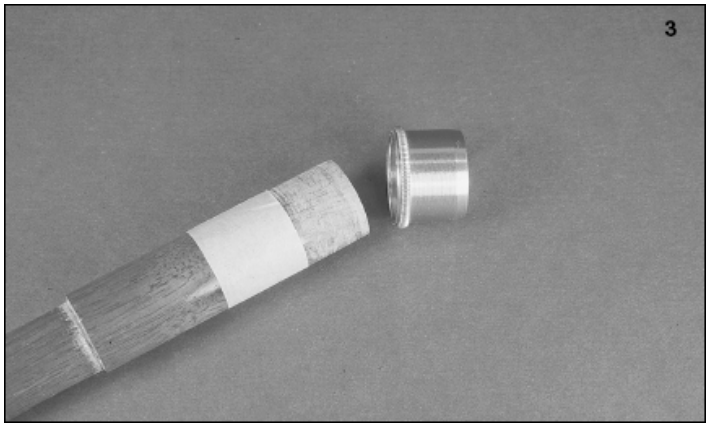



**This is a typical contemporary trout rod. The blank is an IM6 graphite model for a 5-weight line. I picked a good-looking, very reasonably priced uplocking seat with aluminum hardware and a walnut insert. The handle is a reversed half-Wells (some would call it a Western) style with a recess to fit the uplocking hood of the reel seat. Both components came from the Jannâs Netcraft catalog; Iâm fairly certain that they were manufactured by Pacific Bay. The entire projectâblank, reel seat, handle, winding check, guides, thread, and finishâcost under $100, retail, and the end result was a delightful all-around trout rod.**

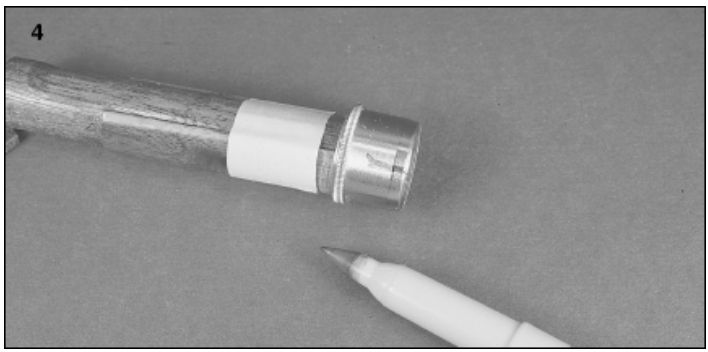



**The reel seat came unassembled. Note that the walnut insert has a milled slot for the reel foot, and that the threaded barrel (top left) has a cutout that must be**

**aligned with this slot. For the moment, though, weâre interested only in the wood insert and the fixed hood (the metal part at the upper right).**

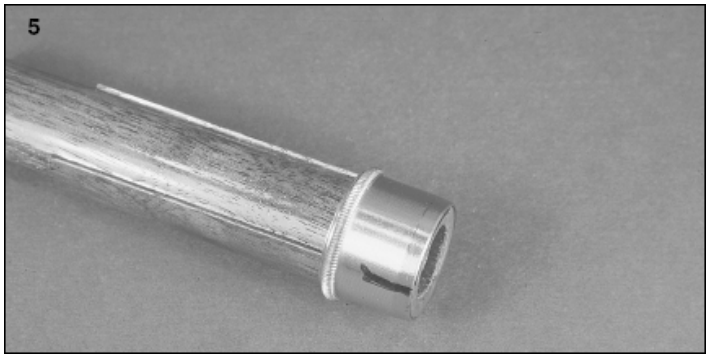



**To give the end of the insert some âtooth,â weâll roughen it with 100-grit sandpaper. Slide the fixed hood onto the insert, and use a wrap of masking tape to mark off the area that the hood will occupy. Lightly sand the end of the insert across the grain of the wood; you want only to make some scratches in the woodâs finish, so that it will hold glue better. Do not score the milled slot for the reel foot, since it will not receive any glue.**

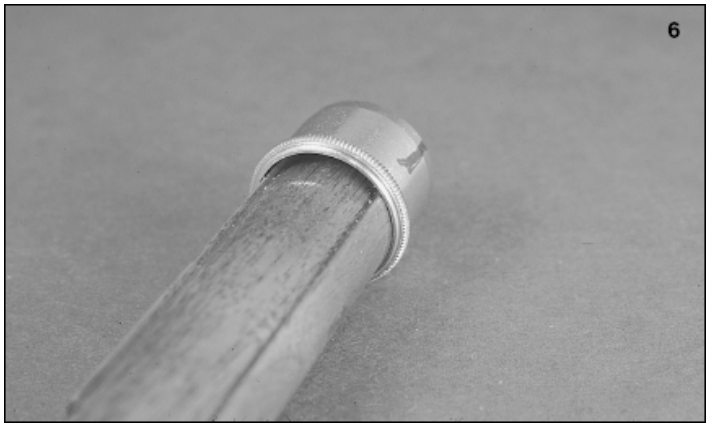



**Youâll apply a very thin layer of epoxy to both the wood insert and the inside of the fixed hood. But you donât want to put any glue on the milled slot, or inside the portion of the hood that will be aligned with the slotâif**

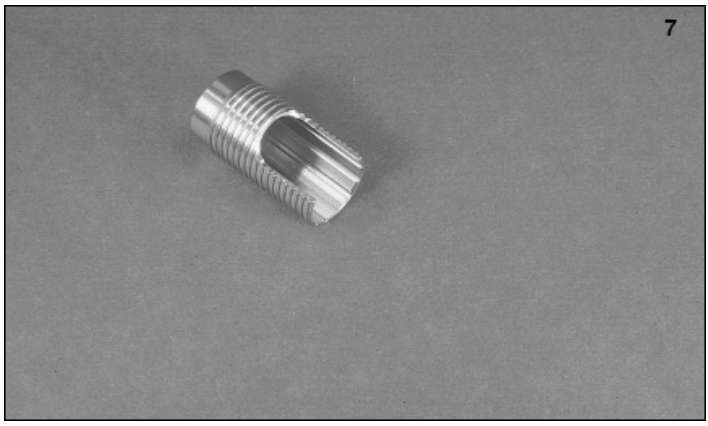
you did, you would fill the pocket where the reel foot goes, rendering the seat useless. To make sure that you donât put epoxy in the wrong place, slip the hood onto the insert and make two marks even with the sides of the milled slot, as shown. When you apply the glue, donât put any between these marks.



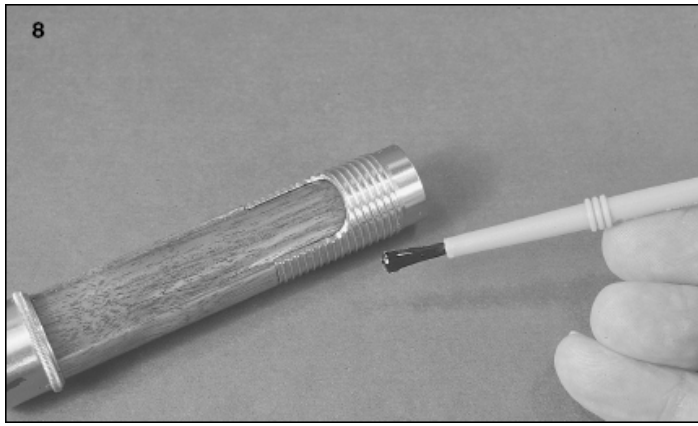

Clean the end of the insert and the inside of the hood with a rag wetted with alcohol. Mix a small batch of epoxy. With a small, disposable paintbrush, apply a thin film of the glue to the scored area of the wood insert. Then apply an equally thin layer of epoxy to the inside of the fixed hood, taking care not to get any glue on the area that will be aligned with the milled slot in the insert (the area between the marks, that is). Slide the hood straight onto the insert, keeping the glue-free area inside the hood lined up with the slot in the wood. Use a small piece of stiff paper to scoop up any excess epoxy that oozes out in front of the hood. When the hood is in position (it should be even with the end of the wood insert), remove the masking tape from the wood. Use a paper towel moistened with alcohol to clean up any excess epoxy, but take care not to disturb the alignment of the hood.



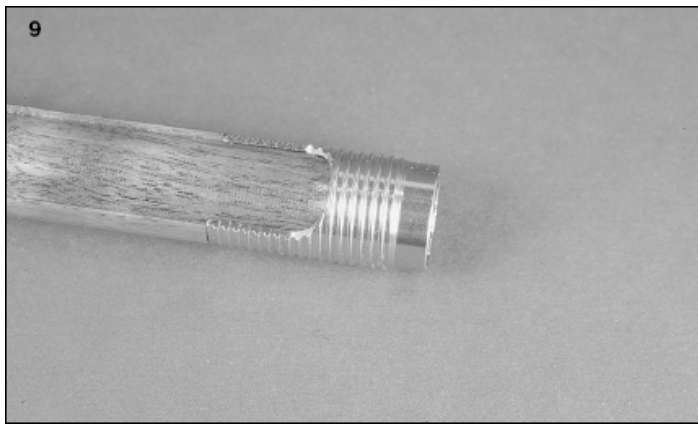

**Hereâs another view of the milled slot and fixed hood. The pocket for the reel foot is made by the slot in the wood, not by a hump in the metal. Thatâs why you had to be careful not to get any epoxy in this area. Once the excess epoxy has been cleaned up, you can set these parts aside to let the glue cure. Incidentally, this design, with a round, symmetric fixed hood, simplifies the job of fitting a recessed grip to the reel seat.**




**The threaded barrel has lengthwise grooves on the inside. This is a nice touch, because it makes for a better glue bond and a stronger installation. Nonetheless, clean the inside of the threaded barrel with a rag moistened with alcohol to remove any dirt or oil.**



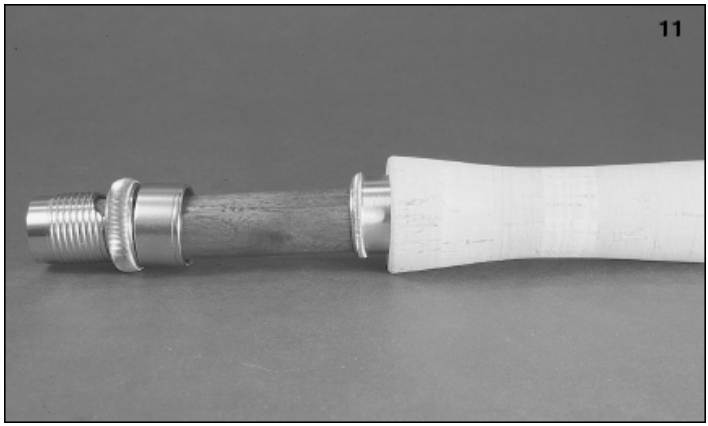

**Test-fit the threaded barrel on the wood insert to make sure that it fits tightly against the âstepâ in the wood. Any small imperfections can be remedied with fine sandpaper. Once youâre happy with how the parts fit, mix another batch of epoxy. You can use a small, disposable brush to apply a thin layer of glue to the inside of the threaded barrel and to the area of wood that it will occupy.**




**Apply the epoxy and slide the threaded barrel into place. Use a small piece of stiff paper (a Post-it note folded in half works fine) to scoop up any excess glue that oozes out as you slide the metal component home. Then use an alcohol-moistened paper towel to wipe up any extra epoxy where the metal part meets the step in the wood. Take great care not to get any epoxy on the threads. Note how**

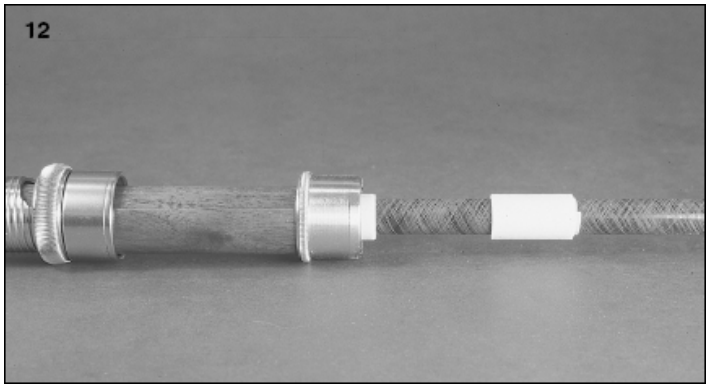
**the cutout in the threaded barrel is perfectly aligned with the milled slot in the wood. Set the assembly aside to let the glue cure.**

**Weâre using a grip already inletted to fit over the fixed hood of this reel seat. The parts were purchased as matched components. The folk at Jannâs Netcraft, bless them, publish a catalog that explicitly says which reel seats go with which grips, saving us amateurs a lot of time and frustration. Some other mail-order houses should take the hint.**

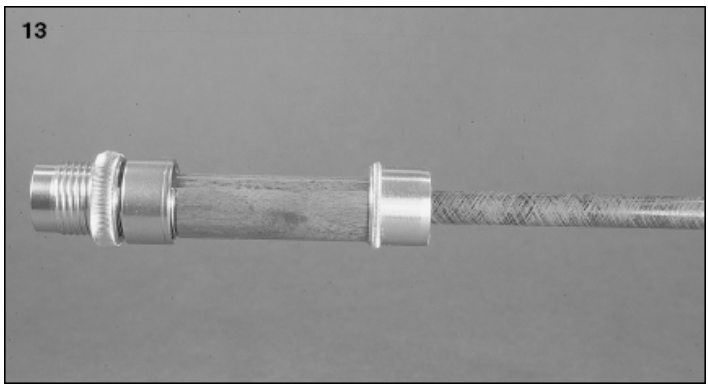



**Even with a ready-made grip, however, youâre wise to check the fit of the recess by sliding the fixed hood into**

**the bottom of the handle. This one was a bit snug; most are, and too tight is always better than too loose. A rolled-up piece of 200-grit sandpaper solved the problem, removing a tiny amount of cork so that the handle fit the reel seat perfectly. On any assembly, make sure that everything fits before you start slathering glue on the parts.**

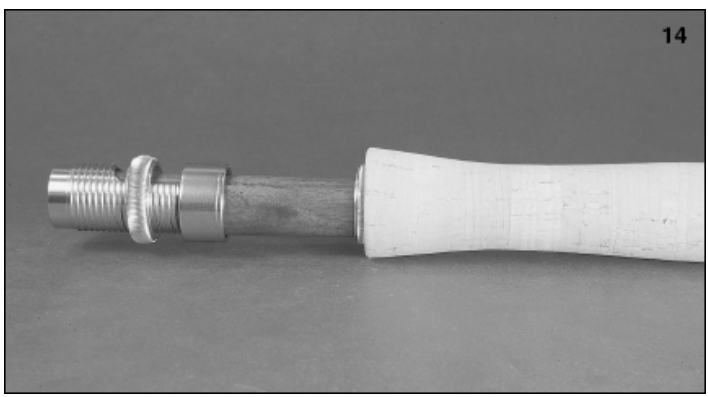



**The i.d. of the reel seat and the o.d. of the blank donât differ by much. A pair of small masking-tape bushings will take up the difference and center the reel seat on the blank. Before making the bushings, of course, you lightly scored the bottom end of the blank with 100-grit sandpaper, and then cleaned it with alcohol.**

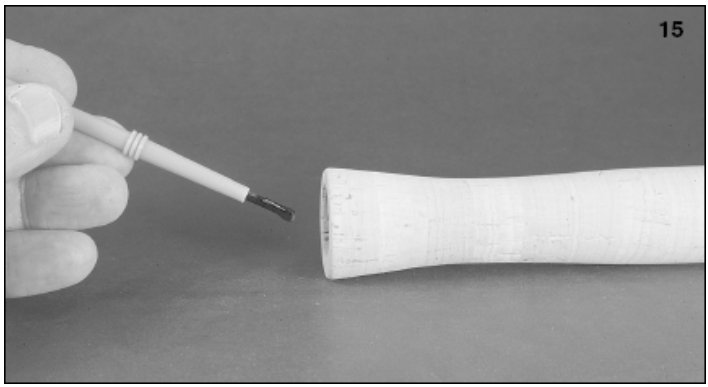



**Weâll use paste epoxy to mount the reel seat. Spread a thin coat of the goo on the bushings, and then use more**

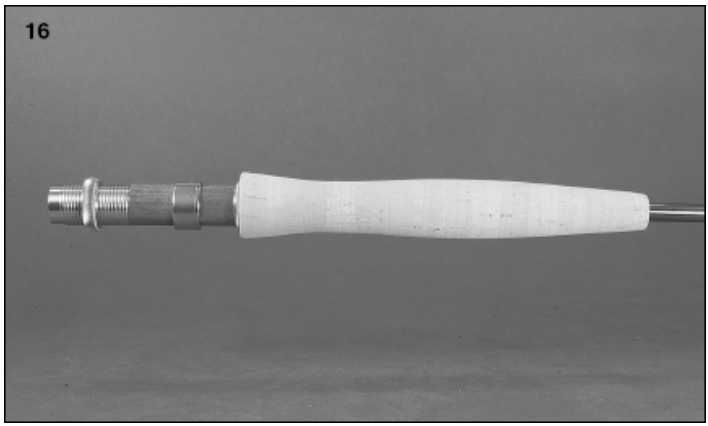
**epoxy to fill the space between the bushings, creating a solid, cylindrical blob of adhesive. Slide the reel seat onto the blank, twisting it to distribute the epoxy inside it. Remember that the bottom of the reel seat should *not* be even with the bottom of the blankâyou must leave room to glue in the butt cap. Remember, too, that you must align the seat with the spine of the blank (which, of course, you found and marked before you started monkeying around with the other components). In this case, the milled slot for the reel foot should line up with the spine mark on the blank. Once the reel seat is aligned, lay the assembly down to give the epoxy time to get stiff.**




**Now for the handle. On this installation, you must be particularly careful to keep the hole in the middle of the grip perfectly centered as you enlarge it. If you make the hole off center as you taper-ream it, the recess in the handle will not fit the reel seat. Thereâs no trick to getting it right; you simply have to work slowly and carefully, removing cork from the inside of the handle a little at a time, and test-fitting the handle every couple of minutes until it fits perfectly, as shown. It can help to make the hole in the lower end of the grip a *little* loose; this will give the handle some play on the blank, and allow you to slide the recessed part over the top of the reel seat. But donât make it too looseâ1/16 inch is about the maximum. The loose fit will be filled by epoxy when you mount the handle.**

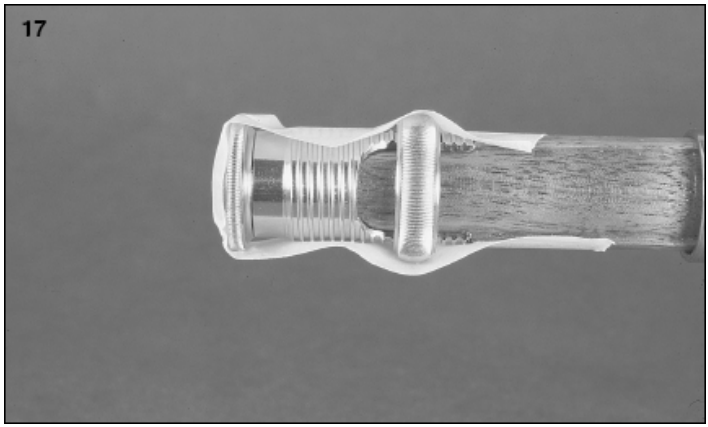



**Happy with how the handle fits? Okay; now weâll attach it to the blank. Mix another batch of epoxy, either paste or Devcon 2-Ton. With a disposable brush, paint a film of glue on the inside of the recess in the handle. This will bond the thin shell of cork to the fixed hood of the reel seat, eliminating the chance that pieces of the handle can break off. Itâs a good idea always to glue the recessed part of a handle to the outside of the seatâs fixed hood.**

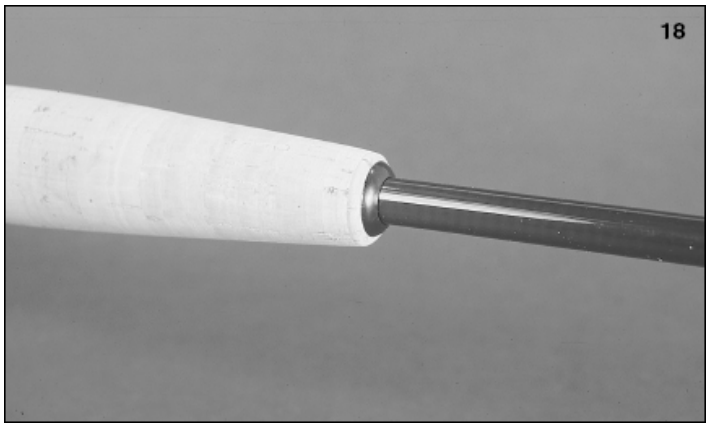



**Smear a layer of epoxy on the blank, covering the entire area to be occupied by the handle and another inch above that space. Slide the handle into place, twisting it as you go to distribute the glue. When the grip reaches the top of the reel seat, stop for a moment to paint a *very* thin layer of epoxy on the outside of the fixed hood. Carefully slide the grip into its final position, bottoming the handle**

**against the knurled ring on the fixed hood. Clean up any excess epoxy where the cork meets the metal, and then wipe off any excess glue on the blank above the grip. Set the assembly aside to let the epoxy harden. If you havenât done so already, install the sliding hood and nut on the reel seat.**

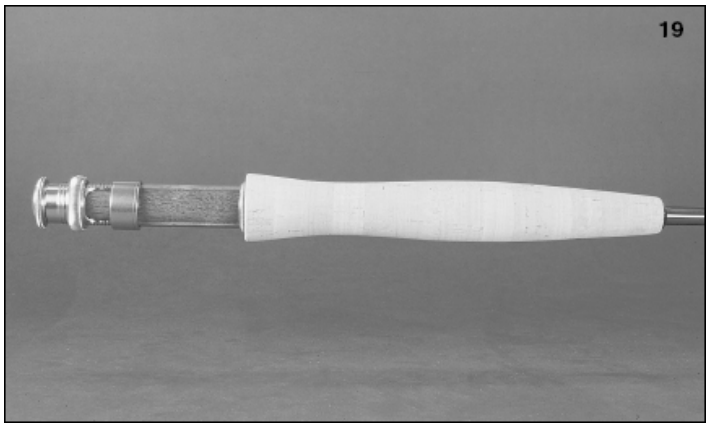



**Use epoxy to glue the butt cap into the bottom of the reel seat. A piece of masking tape will keep the cap in place until the glue has cured. Make sure that you have installed the sliding hood and nut (or nuts) before adding the butt cap.**

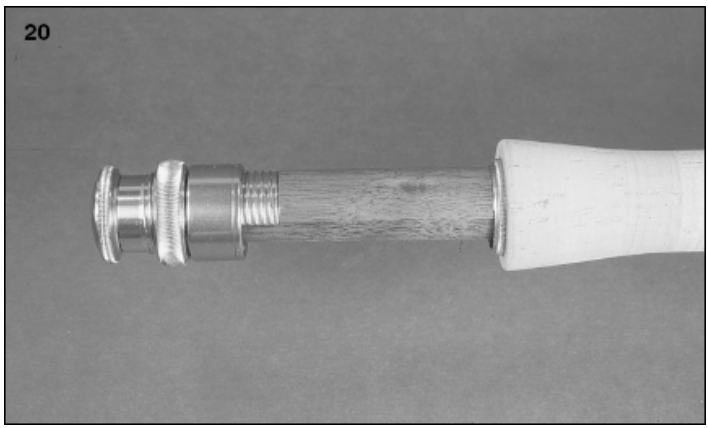



**This handle fit the blank perfectly, with no chips or**

**ragged spots where the cork met the blank. Still, a winding check seemed a nice touch on this dark blank. Since I didnât drop a pile of money on the blank or components, I picked an inexpensive plastic check. A thin bead of epoxy holds it against the front of the handle.**




**Hereâs the complete assembly, awaiting only the hook-keeper wraps above the winding check. You could spend $500 on a factory rod and have something that looks no better. Our cost for the reel seat and recessed handle? Under 40 clams, at full retail. Use the same procedures to assemble, fit, and mount any uplocking skeleton seat.**




**Although it wasnât expensive, this reel seat is a well-**

**thought-out component. Note the matching knurling on the butt cap, nut, and the ring at the bottom of the fixed hood. The milled slot in the wood not only makes for a simple design, but also provides a secure mount for a reel.**

**W**hew. What a lot of blather about a few bits of metal, plastic, wood, and cork. I hope that youâve picked up a few tricks.

Each of the foregoing examples illustrates only one way to meet a particular challenge. None of them is the only way to get the job done, and any of them can be modified. The first rod could have had its Fuji reel seat mounted uplocking, with the fixed hood butted against the handle. We could have turned around the skeleton seat on my little 4-weight rod and buried the fixed hood in a recessed handle. If I werenât such a tightwad, we could have given the 8-weight rod a fancier reel seat with a factory-made fighting butt. The uplocking skeleton seat could have been a pricey nickel-silver model.

We could slog through another 20,000 words and 100 more photos and still examine only a small fraction of all the possible arrangements of reel seats and handles. But we donât need to. Remember always to think before you act, and to test-fit all the parts before applying glue to anything, and you can figure out how to construct the bottom end of any type of fly rod.

And as I promised earlier, youâre done with the hard work after youâve glued the handle to the blank. Letâs move on to the relaxing stuff.

# 4

# GUIDES

If I bought a very expensive, high-performance blank and equipped it with too few of the cheapest guides mounted poorly and in the wrong places, and you purchased a less costly, lower-modulus blank on which you mounted the ideal number of good guides in exactly the right spots, your rod would outperform mine.

Guides attach the load to a rod. When you cast, the line is the load; after a fish bites your fly, the fishâs mass and strength are the load. A rodâs thin tip bends more easily than its thicker butt. The guides transfer the load down the blank from thinner, more flexible areas to thicker, stiffer regions. How the load is attached to and transferred down the blank has a lot to do with how well a rod works. A fly rod with only one guideâa ring on the tipâwould neither throw a line nor whip a fish very well. A rod with only a few guides wouldnât be much better. Even with an adequate number of guides, itâs possible to build a less-than-ideal rod by mounting them incorrectly.

None of which means that you should get gray hairs worrying about guides. As with other aspects of rod making and angling, with guides you have choices. Thereâs generally more than one right way to set up a fly rod.

Letâs look at some of your choices, and then figure out what to do with whatever guides you select.

## TRADITIONAL SETUPS

The snake guides used on the vast majority of factory rods, and I suspect on most custom jobs, work perfectly well for most types of angling. Snake guides donât weigh much, they hold up pretty well, and, because weâre used to seeing them, they look right on a fly rod. They also cost less than most other types of guides.

Good snake guides are made of chromed stainless-steel wire. The chrome makes them more durable, since stainless steel is a relatively soft metal. Perfection, Hopkins & Holloway, Pacific Bay, and Clemens Super Snakes are all reliable names.

Incidentally, the main cause of prematurely worn snake guides is fishing with dirty lines. Tiny particles of dirt on a fly line act as an abrasive, slowly grinding away at the guides. Clean your lines frequently, and your guides will last much longer.

Besides shiny chrome, snake guides can also be had with other finishes. Pacific Bay makes snake guides with a black chrome finish; Hopkins & Holloway offers snakes with blued and bronze finishes. Whether to use such guides is largely an aesthetic decision; black guides, for instance, look sharp on a black or dark gray blank.

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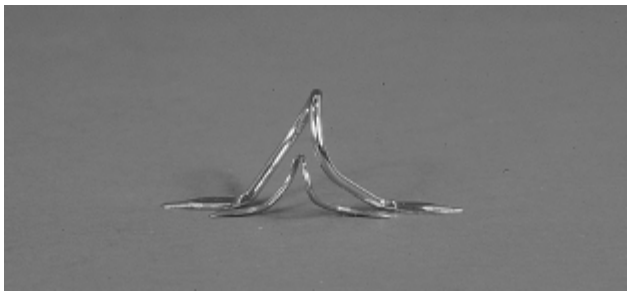

**Although theyâre old-fashioned, snake guides remain popular among fly-rod builders. Snakes come in at least eight sizes. Shown here are a size 1/0, about the smallest you would use on the tip of an ultralight fly rod, and a size 6, which you might use on the lower half of a saltwater stick.**

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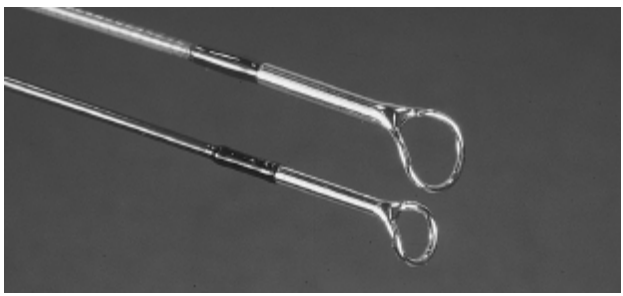

**Conventional tip-tops come in several sizes. A standard-sized top is okay on a 6-weight or lighter freshwater rod. On a 7-weight or heavier rod, use a large or extra-large tip-top. Like snake guides, tip-tops are made with a number of finishes.**

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A rod equipped with snake guides also gets a traditional tip-topâa pear-shaped wire loop affixed to a tube that fits over the end of the rod blank. A tip-topâs tube (and the tip end of a blank) is measured in sixty-fourths of an inch; that is, a size 5 top has a tube with an inside diameter of 5/64 inch. A size 5.5 tip has a tube that measures 5.5/64 of an inch, or, in unmixed terms, 11/128. In a rod-building catalog, however, it will be listed as a size 5.5 tip-top. This measurement has nothing to do with the diameter of the ring through which the line passes. Catalogs also list the tip measurements of blanks in sixty-fourths so that youâll know which tip-top to order for your rod.

Most wire tip-tops are offered with standard or oversized loops; some tops come in three sizes. Use standard tip-tops on freshwater rods for line weights 6 and lighter, and oversized tops on all saltwater rods and freshwater sticks from 7-weight up. The rod-building trade loves to mix measurements. You can, for instance, purchase a Pacific Bay tip-top with a 6/64 tube and a 7.8-millimeter loop. After a while, you get used to it.

Many styles of stripping guides can be used with traditional snakes. Most look like the double-footed guides used on plug-casting rods, because thatâs what they are. Except for bamboo craftsmen who want their rods to have an old-fashioned look, nearly all rod builders use stripping guides that consist of metal frames with man-made inserts or rings. Even the least expensive of these guides will often outlast all the other components of a rod. Iâve used economical Fuji Hardloy stripping guides on many rods, and Iâve yet to have one show any wear, much less fail. The rings in such guides are made of aluminum oxide. When it occurs in nature, aluminum oxide is called corundum; itâs the stuff of which sapphires and rubies

are composed. Pacific Bayâs Hialoy guides have rings made of the same sort of material, and they, too, hold up very well, as do the Seymo ceramic guides from Hopkins & Holloway. On anything but a heavy-duty saltwater rod, an aluminum-oxide stripper is more than good enough.

If you want a harder stripping guide, you can spring for a SiC (silicon-carbide), Alconite, or Gold Cermet guide from Fuji or a silicon-carbide, titanium-nitride (TiN), or titanium-carbide (TiCH) guide from Pacific Bay. Each of these has a man-made ring impervious to anything softer than diamond-tipped cutting tools. Some of these guides, such as Fujiâs SiC Gold Cermet models, have titanium frames that are very light and entirely corrosion-proof. But these super-tough guides cost much more than their aluminum-oxide counterparts. Using them on light freshwater rods seems superfluous to me. On a saltwater stick, a SiC or similarly hard stripping guide can justify its cost by lasting indefinitely. Of course, if youâre worried about durability in a marine environment, you might also want to equip your rod with running guides and a tip-top made with sturdier stuff; more on these anon.

**On graphite or fiberglass fly rods, use stripping guides with synthetic inserts. These Pacific Bay Hialoy guides have stainless frames and aluminum-oxide rings; Fuji offers similar models.**

Some rod builders argue that one stripping guide is enough on any but the heaviest saltwater rod, but I donât agree. On

freshwater rods up to 8 feet in length, I use one stripping guide. On any rod longer than 8 feet, I use two. Maybe Iâm kidding myself, but I think that a pair of oversized strippers lets me shoot line a little more easily. On a heavy-duty saltwater rod, Iâd use three stripping guides.

If youâre building a rod for trout, bass, salmon, pike, or steelhead fishing, you can confidently use hard-chromed snake guides, a traditional tip-top (with an oversized loop on a rod for a heavier line), and, depending on the length of the blank, one or two aluminum-oxide stripping guides. Although itâs inexpensive, that combination will endure many years of fishing. The same setup will also work on a saltwater rod. If you do a lot of saltwater fishing, however, you might want to think about more wear-resistant guides.

**SUPERIOR SNAKES**

A friend of mine, an angler of many accomplishments who has arrived at the happy state of fishing only as he pleases, once explained why he doesnât like fly fishing in the surf. âThereâs no place to sit down and rest,â he says of the beach, âand the damned sand gets into everything.â

A confirmed rock monkey or beach angler might answer âSo what?â to my friendâs first objection; you can sit down and rest at home. But no one can deny that saltwater angling entails dealing with sand in and on your tackle. So does some freshwater angling, of course.

Tiny bits of sand get stuck in the coating of your fly line, where they act as an abrasive. Every time you cast, and every time you fight a fish, grit embedded in the line saws away at the guides. In time, that abrasion can wear out even top-quality hard-chromed snake guides and tip-tops.

Guides with synthetic ringsâaluminum oxide, silicon carbide, and so forthâwill outlast chrome-plated wire in a gritty environment, but a lot of fly fishers prefer snake guides. And so rod-component companies have come up with several ways to make snake guides more durable. Most involve coating or plating the guides with a very hard substance. The first such guides to hit the market were stainless-steel snakes and tip-tops coated with titanium nitride, a handsome, gold-colored substance that has excellent resistance to abrasion. More

recently, titanium-nitride snake guides have been joined by other extra-hard guides. Pacific Bay makes snake guides and wire tip-tops with a gray titanium-carbide (TiCH) coating. Hopkins & Holloway also has titanium-carbide snakes, along with guides coated with a black finish called Diamond Like Carbide, or DLC. Both of those companies also sell gold, titanium-nitride snakes and tip-tops. All of these guides start out as stainless-steel snakes; the TiCH or TiN or whatever is a coating applied to the metal, usually over a base of chrome plating.

The main point of these coatings is to provide superior resistance to wear and saltwater corrosion. Guides made with these substances are also very slick.

They cost more than chromed stainless-steel snake guides, tooâtwo to four times more, depending on whose catalog youâre reading. Their durability, however, makes them worth every penny to some anglers. If you fish in salt water and want to build a superior rod, you might find that titanium-nitride or titanium-carbide guides save you money in the long run, because you wonât have to replace them. If you fish strictly in fresh water, you really donât need them. On the other hand, titanium-nitride and similar guides donât have any drawbacks other than their price; if you want to be able to say that youâve built the best rod you could, go ahead and spend the extra money, particularly if youâve already dropped several hundred dollars on a sexy blank.

If you do opt for any of these high-tech snakes, make sure that you get stripping guides with a matching finish. With gold titanium-nitride snake guides and tip-top, for instance, you can use gold Fuji SiC or Cermet strippers, Pacific Bay stripping guides with the TiGold finish, or Hopkins & Holloway Ceymo strippers with the gold finish.

REC Components has found another way to make better snake guides. Its Recoil guides are made of nickel-titanium wire, the stuff used to make virtually indestructible frames for some spinnerbaits. Nickel titanium is strange stuff; you can twist a Recoil guide way out of shape, but it snaps back to its original form the instant you let go. Unlike most metals, including spring steel, nickel-titanium wire seems immune to metal fatigue. The material is also very light, hard, slick, and

utterly corrosion-proof. Since Recoil guides are both lighter and more flexible than snake guides made with stainless-steel wire, they add less mass to a rod and do not create the âflat spotsâ made by the rigid feet of traditional guides.

Unfortunately, nickel-titanium components ainât cheap. RECâs Recoil guides cost nearly ten times as much as some hard-chromed guides, and three times as much as some guides coated with titanium something-or-other. Although theyâll last forever and let a rod blank perform up to its true potential, their popularity will, I fear, be hampered by their price. But they just might be the most advanced snake guides around.

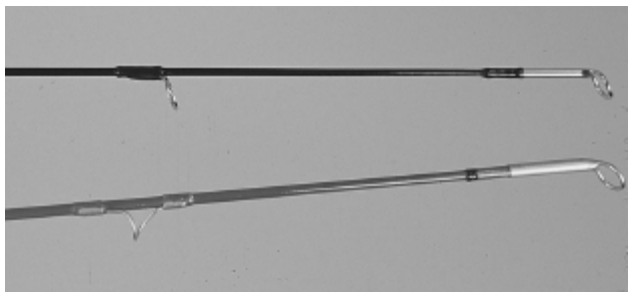
There is, however, another, less expensive way to save some weight and allow a blank to flex more than it would with standard snake guides. It consists of getting rid of half of the guide feet.

**SINGLE-FOOT RUNNING GUIDES**

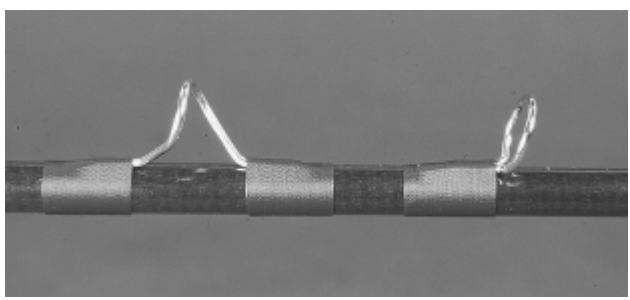
A traditional snake guide has two feet. Each foot is fastened to the blank with a wrap of thread, which is then coated with finish. Besides adding weight, the combination of steel guide and finished wraps creates a âdead spotâ in the blankâs actionâthe guide feet donât flex much, and the finished wraps add thickness to the walls of the blank. Indeed, an experienced rod builder can sometimes use guides and their wraps to alter how a blank feels and casts.

Most of the time, though, we donât want to add any more weight and stiffness than we have to. Single-foot guides were invented to reduce the amount of weight and degree of stiffness a rod builder has to add to a blank. Although a single-foot running guide might not weigh less than a snake guide, it requires only one wrap of thread. By eliminating the second wrap and its finish, a single-foot guide can save a little weight on a finished rod. The advantage lies not in reducing the load you have to lug around all day, but in reducing the mass of the tip section. The more mass you attach to the tip of a rod, the more likely it is to jiggle back and forth at the end of a casting stroke, throwing shock waves into your line and stealing a little distance from your cast. A single-foot guide also shortens the dead spot in the action, allowing the blank to flex more evenly.

Single-foot guides come in two basic varieties. One type is made of wire, and is often (though illogically) called a single-foot snake. Pacific Bay and Hopkins & Holloway manufacture single-foot wire guides. The other type consists of a metal frame in which a ceramic or silicon-carbide ring is mounted; these guides resemble smaller versions of those found on most spinning rods. Fuji and Pacific Bay both manufacture a variety of single-foot guides with man-made inserts.



**Single-foot running guides (top) have grown in popularity. They cut your wrapping time in half, and let you build a rod thatâs a tad lighter and slightly more flexible. They make sense on many rods, particularly longer models for light lines.**



**A two-footed snake guide requires two wraps of thread. By eliminating one wrap and its finish, a single-foot wire guide (right) saves some weight and shortens the âflat**

A rod with single-foot wire guides does feel a tad lighter, crisper, and quicker than an otherwise similar rod built with two-footed snakes. On a long blank for a light line, single-foot wire guides can reduce the âfollow-throughâ effect at the end of each casting stroke, simply because there is less mass on the long, soft tip section. On a heavier, stiffer blank, I havenât noticed that they make much practical difference. Whether single- or double-foot guides produce *better* casting action depends on the blank and is, in any case, a largely subjective matter. While itâs lots of fun to talk about such things as mass, inertia, oscillations, and damping, letâs remember that many superb casting instruments have been made with pieces of bamboo and old-fashioned snake guides.

Still, thereâs something to be said for making and finishing just one wrap for each running guide. With single-foot guides, furthermore, you can add an extra guide to more evenly distribute the load along the blank with adding much extra weight to the tip section. This can help on a soft blank.

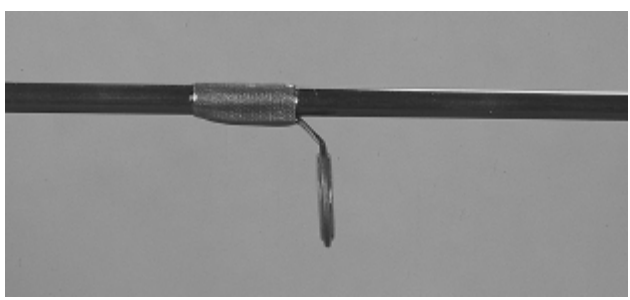
On most trout and panfish rods, I think you can flip a coin to decide between single-foot wire guides and traditional snake guides. The two types of guides can produce different results, but it seems impossible to say that either style *always* produces better results, regardless of the blank. If youâre obsessed with building the lightest possible rod, then use single-foot guides. A long, featherweight rodâa 9-footer for a 3-weight line, sayâwill probably throw tighter loops with single-foot wire guides than with snakes. Use the same type of stripping guides you would use with snake guides.

On a heavier rod, I still prefer the security of snake guides with two feet. I admit that this view derives more from gut feeling and habit than from logic. A lot of rod builders and several manufacturers use single-foot wire guides on rods for the salt. Pacific Bay even manufactures one-footed guides coated with titanium nitride or titanium carbide. For now, though, Iâll stick with two-footed guides for heavy-line rods.

The second type of single-foot guides, those with ceramic or

silicon-carbide rings, are extremely durable. As a friend in the trade puts it, âTheyâll outlast cockroaches.â Rings made of aluminum oxide or silicon carbide are also mighty slick. Furthermore, the elevated ring of a single-foot Fuji or Pacific Bay guide keeps your line away from the blank; the less your line rubs against the rod, the more of it you can shoot.

For a long time now, insert guides have been touted as the next big thing in fly fishing, yet they never seem to catch on in a big way. The reason, I suspect, is not because all fly fishers are hidebound traditionalists, but because the actual benefits of these guides donât quite match their hypothetical advantages. Indeed, a friend who was a partner in a major fly-rod company tells me that he and his colleagues tested insert guides some years ago. They built several rods identical in all respects except for the guides; some had regular snake guides, and others had single-foot running guides with synthetic rings. Then these chaps, good casters all, tested the rods to see which performed better. They found no differences.



**Single-foot running guides with inserts, such as this Fuji Hardloy model, combine high resistance to wear with low friction. On a fly rod, though, insert guides are not without disadvantages, and relatively few fly rods have them.**

An insert guide has a relatively wide, slightly cupped foot thatâs also a tad longer than the foot of a snake guide. That wide foot doesnât flex at all, and its length requires you to

make a longer wrap than you would make on either foot of a snake guide. So, rather than cutting a âdead spotâ in a blank in half, a single-foot insert guide reduces it by only a small fraction.

Insert guides donât necessarily save weight, either. The rings have fairly small holes compared to the overall widths of their frames. That doesnât matter on a spinning or plug-casting rod, where a flying lure pulls a continuous length of very thin monofilament through the guides. On a fly rod, though, one at least hopes that connections between relatively thick lines will have to pass through the guides. If you use shooting heads for saltwater or steelhead fishing, you might have two loop-to-loop connections (head to running line, and running line to backing) that have to go through the guides. For that reason, you want your rod to have large guides. A size 3 Pacific Bay snake guide, of which you might use at least two on the tip of an 8-weight rod, has a side-to-side i.d. of 6.3 millimeters, according to the catalog. To approximate that inside diameter with an insert guide, youâd have to use a pretty big one. If you build a fly rod with insert guides that have as much clearance for knots and tangles as snake guides do, you end up with a tip section thatâs slightly heavier, slower, and more wind-resistant. Thatâs been my experience, and my friend who tested insert guides for his company confirms it.

Finally, insert guides seem more prone to catching on thingsâbrush, canoe thwarts, boat cleats, and so forth. A fly rodâs length exacerbates the problem.

If fly fishing consisted only of distance casting, there might be some advantage to using small, super-slick guides with synthetic inserts. On a rod for fly *fishing*, they really donât seem to offer any advantages. Single-foot wire guides provide a greater weight reduction and more flexibility. Snake or single-foot wire guides coated with titanium nitride or titanium carbide provide all the resistance to wear you could want. Super-hard snakes also have the inherent security of two-footed guides when you have to pull against a sea monster.

Yes, a complete set of silicon-carbide running guides probably offers the highest possible resistance to wear and lowest coefficient of friction (at the highest price, too). But

that strikes me as a bit like equipping a car with tires that will last 200,000 miles.

Among most fly-rod builders, running guides with man-made inserts seem to have been pushed aside by single-foot wire guides and snake guides coated with titanium nitride or titanium carbide. If you decide to buy single-foot insert guides, use a tip-top that matches themâa Hardloy top with Hardloy guides, a SiC top with SiC guides, and so forth. Naturally, the stripping guides should also match the running guides.

Some anglers worry that single-foot guides will eventually loosen. They can, if they were poorly mounted. A first-time rod builder sweating to manage thread tension and struggling to attach guides in a straight line is probably better off working with traditional snake guides; theyâre slightly more forgiving of inexperience.

If you wrap them well and finish the wraps properly, single-foot guides will stay put. In many years of fishing with spinning rods equipped with single-foot guides, Iâve had to replace exactly one guideânot because it came unstuck from the blank, but because the ceramic ring was knocked out of the frame. On one cheap plug rod, one of the single-foot guides is sufficiently loose that I can hear a *click* when the blank flexes. Otherwise, Iâve had no problems with one-footed guides.

**WHICH GUIDES SHOULD YOU BUY?**

For most angling, particularly in fresh water, youâll find hard-chromed snake guides, a traditional tip-top, and aluminum-oxide stripping guides perfectly adequate. Theyâll perform well and last for many years; many high-priced factory rods have precisely that setup. This is also the least costly way to put guides on a rod.

Single-foot wire running guides can save some time at the workbench and will produce a marginally lighter, slightly more flexible rod with a little less inertia in the tip. If youâre building a light- to middleweight rodâup through a 7-weight stick, sayâsingle-foot wire guides such as those made by Pacific Bay will work fine. On a heavier rod, I still prefer the security of two guide feet.

On a rod thatâs going to see hard, frequent use in salt water, you might want to spring for titanium-nitride or

titanium-carbide snake guides, a matching top, and silicon-carbide stripping guides, or another setup made with similarly hard materials. Youâll probably break the blank before such components wear out.

Remember that accidents happen, and that manufacturers change specifications or finishes without notice, or even go out of business. Order extra guides in each size. If, five years from now, the manufacturer discontinues that model, youâll still have spare guides on hand. Even if you build all your rods with conventional snake guides and garden-variety strippers, itâs still not a bad idea to maintain a stock of spares so that you can replace a damaged guide right away.

And remember that all guides work best with a clean line. If you spend a pile of dough on super-hard, ultraslick guides and then go years at a stretch without cleaning your fly lines, youâve thrown your money away. Cleaning a line does almost as much to improve a fly rod as taking casting lessons does.

**HOW MANY GUIDES?**

In general, a fly rod gets one guide per foot of length, plus one more. An 8-foot rod gets 9 guides, not counting the tip-top; a 9-foot stick gets 10 guides, exclusive of the top.

What about rods that donât have even measurements? On a 7Â½- or 8Â½-foot blank, Iâm inclined to round up, using 9 or 10 guides, respectively. On a 7-foot, 2-inch or 8-foot, 3-inch blank, Iâll generally round down and use 8 or 9 guides, respectively.

On a blank 10 feet long or longer, Iâd suggest using one extra guideâ12 guides on a 10-foot rod, for instance. The extra guide helps to spread the load more evenly along the blank.

On a blank 8 feet or shorter, use one stripping guide. On any rod 9 feet in length or longer, use at least two stripping guides; a saltwater rod for tarpon, billfish, sharks, cobia, and similarly rambunctious beasts should get three strippers. Between 8 and 9 feet, itâs a judgment call. If an 8Â½-foot blank is designed to throw a light line, one stripping guide will do. On a 7-weight or heavier blank, though, Iâm inclined to use two stripping guides even if the rod measures less than 9 feet. The extra stripping guide does seem to make it a little easier to shoot a lot of line, which Iâm more likely to do with a

7-weight rig than with a 4-weight.

**HOW BIG?**

It would seem that as long as a guide is wider than the line and knots that must pass through it, itâs big enough. In angling, of course, nothing is quite so simple as it seems.

Larger guides can make casting easier. By letting the line hang farther from the blank, oversized snake guides reduce the frequency of contact between line and blank, and therefore reduce the amount of friction that steals distance from your cast. Itty-bitty guides, which were common on fly rods 40 years ago, let the line rub against the blank.

Large guides also help when you hook a big fish. The larger the guide, the more likely it is that the line-to-backing junction will go through without hanging up. If the running line behind a shooting head gets a tangle in it just as a big fish decides to take off, you will be very happy to have oversized guides.

But big guides weigh more than little guides. Excess weight makes a rodâs tip wobble back and forth at the end of each casting stroke, putting shock waves into the line. Mass out near the end of a blank greatly increases a rodâs perceived or in-the-hand weight.

And so we find a compromise when we select guides. Generally, though, modern graphite blanks let us use slightly larger guides than rod builders used on fiberglass rods 40 years ago.

Snake guides, like fishhooks, go by numbers: 2/0, 1/0, 1, 2, 3, and so forth. But the numbering system for guides is the opposite of that used for hooks: A size 2 snake guide is bigger than a size 1 guide; a size 1/0 guide is smaller than a size 1. In most catalogs, youâll find snake guides from size 2/0 up to size 6; occasionally, youâll find snakes as small as size 3/0. These designations do not correspond to universal standards; one companyâs size 1 snake guides might be a trifle larger or smaller than anotherâs. Donât worry about minor differences among manufacturers.

Stripping guides are measured differently. A size 12 stripper has a diameter of 12 millimeters, measured across the inside of the metal frame that holds the ring. In other words, the hole in the middle of a size 12 stripping guide measures something

less than 12 millimeters. How much less varies according to the dimensions of the man-made insert. Like fishhooks, rod guides have no standards. This drives engineer types crazy but doesnât pose a problem for us amateur rod makers. Youâll never use stripping guides from two manufacturers on the same rod, and the differences in dimensions between, say, a size 12 Fuji Hardloy and a size 12 Pacific Bay Hialoy arenât worth worrying about.

Single-foot wire guides are designated by numbers: size 1, size 2, size 3, and so on. The numbers donât correspond to universal standards, and a size 2 single-foot guide might not have the same diameter as a size 2 snake guide from the same company; generally, the single-foot guide is a tad smaller. But a few thousandths of an inch ainât worth losing sleep over. You can use size 1 single-foot wire guides where youâd use size 1 snakes, size 2 single-footers where youâd use size 2 snakes, and so forth.

Single-foot guides with insertsâFuji Hardloy or SiC guides, Hopkins & Holloway Seymo guides, and similar hardwareâare measured like stripping guides. A size 8 Fuji Hardloy guide, for instance, has a diameter of 8 millimeters, measured across the inside of the metal frame that holds the ceramic ring; the hole in the ring is considerably smaller. Single-foot guides with synthetic rings range in size from 6 to 10 millimeters.

On any rod, you start out with smaller guides near the tip and use progressively larger guides as you move down the blank. The last, largest snake guide should be a little smaller than the stripping guide (or the nearest stripper if the rod has more than one). I canât imagine a rod on which Iâd use size 3/0 guides; I wouldnât put size 2/0 snakes on anything heavier than a 2-weight, and then only if the tip end of the blank was very, very thinâ4/64 inch, say. Iâm not crazy about size 1/0 guides, though Iâd use a couple of them on a very light, short rodâa 6- or 6Â½-footer for a 3-weight line, for instance.

Most of the time, I begin a light graphite rod with two size 1 snakes, then use progressively larger guides until I reach the stripping guide. On a rod for a 7- to 10-weight line, Iâll start with size 3 snake guides, and use larger guides (up to size 6, probably) as I move down the blank. On an 11-, 12-, or 13-weight rod, Iâd start with size 4 snakes and progress to size 6.

Iâm fond of big stripping guides. Although strippers come as small as size 8, I never use one smaller than size 10, and I reserve size 10 stripping guides for short, light rods. On a rod 8Â½ or 9 feet long for a 6-weight or lighter line, I use two stripping guides, sizes 10 and 12. My 7- through 9-weight rods get size 12 and size 16 stripping guides. On a thunder-stick for tarpon or offshore angling, Iâd use three stripping guides: sizes 12, 16, and 20.

Some examples will help to clarify matters. Each of the following specifications lists snake guides or single-foot wire guides followed by Fuji or Pacific Bay strippers.

**A 7-foot rod for a 3- or 4-weight line:** Standard-sized tip-top; one size 1/0 guide; two size 1 guides; two size 2 guides; one size 3 guide; one size 4 guide; a size 10 stripping guide.

**An 8-foot rod for a 4- or 5-weight line:** Standard-sized tip-top; two size 1 guides; two size 2 guides; two size 3 guides; two size 4 guides; a size 12 stripping guide.

**An 8Â½- or 9-foot rod for a 5- or 6-weight line:** Standard-sized tip-top; two size 1 guides; two size 2 guides; two size 3 guides; two size 4 guides (or one size 4 and one size 5); one size 10 stripping guide; one size 12 stripping guide.

**A 9-foot freshwater rod for a 7-, 8-, or 9-weight line:** Oversized tip-top; two size 2 guides; two size 3 guides; two size 4 guides; one size 5 guide; one size 6 guide; one size 12 stripping guide; one size 16 stripping guide.

**A 9-foot saltwater rod for an 8-, 9-, or 10-weight line:** Oversized tip-top; three size 3 snake guides; two size 4 snake guides; two size 5 snake guides; one size 6 snake guide; one size 12 stripping guide; one size 16 stripping guide. On a 9- or 10-weight rod, some anglers prefer stripping guides in sizes 16 and 20.

**A 9-foot rod for an 11-, 12-, or 13-weight line:**

Oversized tip-top; two size 3 guides; two size 4 guides; two size 5 guides; one size 6 guide; a size 12 stripping guide; a size 16 stripping guide; a size 20 stripping guide. On a 12- or 13-weight stick for pulling on tarpon, you can use three size 4 snakes guides, two 5s, two 6s, and the same stripping guides.

Get the picture? You start small (though not too small), progress through larger snake guides, and finish with one or more stripping guides. When in doubt about strippers, go bigger. None of the examples above is divinely ordained truth, by the way. On a very soft blank, you might want to begin with guides one size smaller than those I listed, or you might want to use three guides of the smallest size rather than two.

Most supply houses sell guide sets that save you the trouble of figuring out what you need. Most of the time, these sets contain safe sizes. Some sets, however, contain one guide fewer than the ideal number; a set for an 8Â½-foot rod, for example, might contain 9 guides rather than the 10 I would prefer. And if you want oversized guides, as I often do, you have to order them individually. Donât forget to purchase some spares.

**WHERE DO THEY GO?**

Guide spacing scares a lot of beginning rod builders. Thereâs nothing to fear. Where you put the guides matters, and gross errors in spacing can spoil a rodâs performance, but finding out how to space the guides isnât difficult.

More often than not, you can get the information you need from a manufacturer, if not from the outfit that sold you the blank. If you purchased a 9-foot, 7-weight StringSlinger Special blank from a mail-order house and have no idea where to put the guides, check the StringSlinger web site. You might find a guide-spacing table there. If you donât, get on the blower and see if the company can mail or fax you the specs. Most companies are generous with this information.

When you compare specifications from several manufacturers, youâll see that they donât agree on guide spacing. Some makers use the same specs for most rods of the same length; they build all 9-foot rods, for instance, with the

same guide spacing. Other companies work out guide spacing for each model: A fast-action 9-foot 5-weight and a medium-action 9-footer for a 6-weight line are built with different guide intervals.

The second approach makes more sense. Craftsmen who want to get the most out of their rods donât believe in universal guide-spacing tables. Some rods work best if the interval between guides increases at a fairly even rate; other blanks need a different arrangement, with the guides on the top one-third of the rod spaced a little more closely.

Even if you have a manufacturerâs guide-spacing table, itâs not a bad idea to tape the guides to the blank and test the arrangement before wrapping them in place. For reasons beyond human understanding, a manufacturer will sometimes fail to figure out the best guide arrangement for his own product. A couple of wraps of masking tape or electrical tape will hold each guide while you perform your tests.

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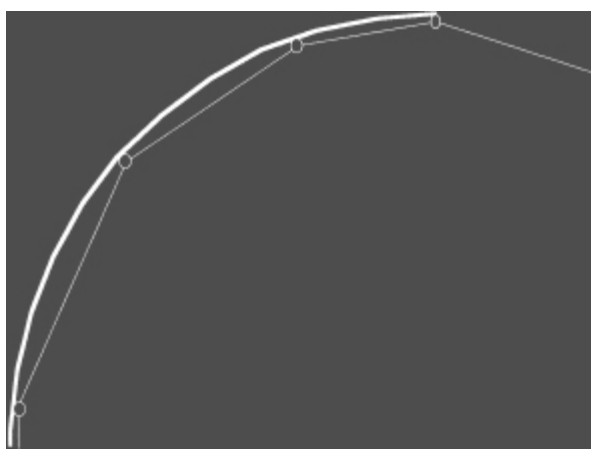
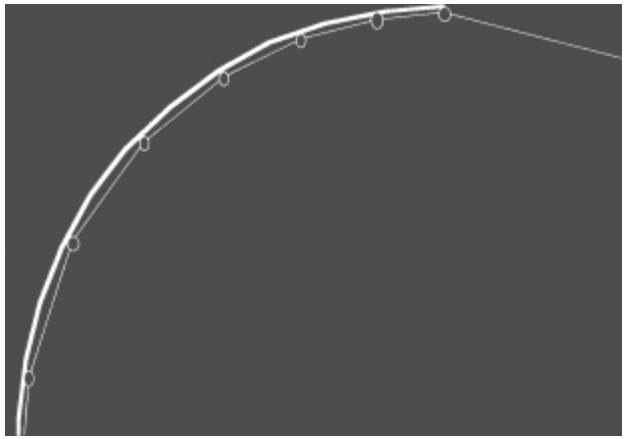


**Too few guides, or guides attached in the wrong places, can hinder a rodâs casting performance and create excessive strain when fighting a fish. A static-load test will reveal problems. Look for sharp angles in the line, places where the line hangs farther from the blank, and areas of the blank that seem unduly stressed.**



**With the right number of guides mounted in the right spots, the line virtually mirrors the curve of the blank during a static-load test.**

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Since youâre going to strain the blank, wrap the female ferrule with thread before monkeying with guides (see chapter 5). After taping on the guides, mount a reel on the rod and pull the line through the guides. Have an assistant hold the end of the line (or fasten it to a doorknob) and put some stress on the rod. See how the line follows the curve of the rod. If you note any sharp angles, move the guides on that area of the rod a little closer together, increasing the space between guides farther down the rod as necessary. Pay particular attention to the top one-third of the blank. If you spot an area where the blank seems to bend drastically, where the line drops farther away from the blank than it does above or below that area, and where the line forms noticeably sharper angles as it passes through the guides, close up the spacing in the troublesome area, and spread the guides farther down the blank. Make small adjustmentsâÂ½ inch at a time is plenty.

If you canât find a satisfactory arrangement, add one more guide, putting 11 guides on a 9-foot rod, for instance. On some blanks, an extra guide is just the thing to eliminate a spot that seems to bend too much. Generally, though, adjusting the spacing will cure any problems.

After performing your static-load tests and adjusting the guides, you can go outside for a little test-casting. Donât play Supercaster. Work out a little less line than youâd expect to carry with the rod under normal circumstances, and note how the rod flexes and feels. Again, pay particular attention to the tip. If the tip feels whippy and soft, or if you sense it collapsing as you cast, move the guides on the top one-third of the rod a little closer together, adjusting the rest to take up the extra space. Youâre not looking for any objective, quantifiable result. Rather, youâre working with your intuition, seeking the arrangement of guides that feels best and seems to let the blank perform best. Obviously, the more experienced a caster you are, the keener your intuition will be.

Although manufacturers differ on where to put guides (as well they should, since they also differ on blank design), they donât disagree by much. One companyâs guide-spacing specifications often work perfectly well on another makerâs blank, provided both rods have similar actions. But I suggest taping the guides in place and testing the rod under a static load before making the wraps.

You can also measure the guide spacing on factory rods you already own, and those owned by friends. If you record the measurements of several 9-foot, 5-weight rods, you will at least have a general idea of where to put the guides on the 5-weight 9-footer youâre building. Tape the guides in place, see how the arrangement works, and make adjustments as necessary.

If you want to work out the guide spacing from scratch, as you might if you buy an unusual or house-label blank, you can at least begin with a couple of fairly reliable measurements. On most fly rods, the stripping guide (or the lowermost stripper if the rod has more than one) goes between 28 and 32 inches above the bottom of the reel seat. If an average-sized adult puts the stripping guide much closer than 28 inches above the bottom of the seat, the line forms a sharp angle as it passes from the anglerâs line hand through the guide. That angle creates extra friction that steals distance from the cast. Putting the stripping guide too close to the handle can also produce shock waves in the rod, automatically spoiling the cast.

If you put the stripper much farther than 32 inches above the bottom of the reel seat, the line might slap against the blank when you shoot a long cast. Furthermore, a stripping guide 4 feet above the reel would take the butt of the rod out of the gameâremember, guides fasten the load to the blank. Besides, you donât want the stripper so far away that you canât reach the line when you accidentally drop it.

On an average fly rodâwhich, nowadays, means one between 8Â½ and 9Â½ feet longâyou can usually put the lowermost guide 30 to 32 inches above the bottom of the reel seat. On a shorter rod for a light line, which you probably wonât use for distance work, you can put it a little closer. Unless youâre a very short person with very short arms, donât put a stripping guide closer than 28 inches from the bottom of the reel seat.

Hereâs a simple way to place the stripping guide. Join the rod sections and hold the rod as if you were stripping in a streamer. Pretend that you dropped the line. Reach out to grab the imaginary line, and note where you touch the blank. Donât stretch your arm as far as it will go; just reach out a comfortable distance. Tape the stripping guide an inch or two beyond where you reachedâjust close enough that you can reach it if you stretch a little. If youâre an average adult male, you will have put the guide from 30 to 32 inches above the lower end of the reel seat. Try it and see. I stand a whisker under 5 feet, 10 inches tall. When I perform this experiment, my left hand generally contacts the blank 28 to 29 inches above the bottom of the reel seat. Add an inch or twoâstill within easy stretching rangeâand the stripper is 30 to 31 inches above the lower end of the seat.

The first guide below the tip-top goes somewhere between 3Â¾ and 4Â½ inches below the top. After the first guide, the interval increases from each guide to the next. If the first guide is 4 inches below the tip-top, the second might be 5 inches below the first, the third 6 inches below the second, the fourth 7 inches below the third, and so on. If you want, you can tape the first guide and the stripping guide in place (at, respectively, 4 inches below the top and 30 to 32 inches above the bottom of the reel seat), and then eyeball the rest of the guides, increasing the spacing as you move down the blank.

Generally, you wonât want an interval greater than 12 inches between guides on the butt section of the rod. Once the guide spacing looks pretty good to you, tape the guides in place and see how the rod bears a moderate load. Youâll probably find that you need to adjust the spacing. This trial-and-error method works very well, though it does take some time.

Or you can use high school math to give you a set of good starting points. Turn on the calculator, and weâll see how.

**AN ALGEBRAIC APPROACH TO GUIDE SPACING**

Remember algebra class? I hope you paid attention. If not, you might want to find a high school kid to help you with this section.

The guide-placement equation below requires us to know three things: the length of the rod from the tip to the bottom of the reel seat; the location of the stripping guide, measured from the bottom of the reel seat; and the distance between the tip-top and first guide. We can learn the first item with a tape measure. The location of the lowermost guide is up to us, but it will probably be from 28 to 32 inches above the bottom of the reel seat.

Where shall we put the first guide? As we noted a moment ago, somewhere around 4 inches below the tip-top seems a universally safe measurement. Locate the first guide more than 5 inches away from the tip-top, and you can put a great deal of stress on the skinny end of the blankâmore, perhaps, than it can handle. Put it closer than 3Â½ inches, and you take the tip of the rod out of the game. Four inches, then, is almost always a safe starting point.

Now letâs play mathematician. For the sake of brevity, weâll make an 8-foot rod. Our rod will have nine guidesâone per foot, plus one. Letâs assume that weâre building the rod for a garden-variety adult male. We can put the stripping guide 30 inches up from the bottom of the reel seat, which, for all practical purposes, is the butt end of the rod (our hypothetical rod does not have a fighting butt). Letâs assign the first guide a spot 4 inches below the tip-top.

Eight feet equal 96 inches. Our stripping guide is 30 inches above the bottom of the rod. That means we shall spread nine guides over a distance of 66 inches: 96 â 30 = 66. The interval

between the tip-top and the first guide is, by executive fiat, 4 inches.

So far, so good. We donât know the space between the first and second guides, the second and third guides, the third and fourth, and so on. Nor do we know the rate at which the interval between guides increases.

But if we can add, subtract, divide, and multiply, we can solve for our unknowns. We already know the distance between the tip-top and first guide: 4 inches. Letâs make the space between guides increase at a progressive rate. We can express the idea like so:

4 + (4 + x) + (4 + 2x) + (4 + 3x) + (4 + 4x) + (4 + 5x) + (4 + 6x) + (4 + 7x) + (4 + 8x).

See whatâs going on? We have nine quantities or measurements corresponding to the nine spaces between guides (counting the space between the tip-top and the first guide), and each space is a multiple of *x* longer than the interval that precedes it. All the quantities must equal 66, because the total distance from the tip-top to the stripping guide is 66 inches. And so we can make the following equation:

66 = 4 + (4 + x) + (4 + 2x) + (4 + 3x) + (4 + 4x) + (4 + 5x) + (4 + 6x) + (4 + 7x) + (4 + 8x).

The rest is mere arithmetic. If we apply the law of commutation, which says that we can ignore the parentheses in an equation that involves only addition, we get:

66 = 36 + 36x.

Subtract 36 from each side of the equation, and we have:

30 = 36x.

To solve for *x,* we divide each side of the equation by 36, and learn that *x* = .833. (Actually, itâs .8333333333333â¦, but we can round it off. Weâre not building a nuclear submarine.)

Okay; the space between guides increases by 833 thousandths of an inch each time. Switching to multiplication, we find that:

2x = 1.666
3x = 2.499
4x = 3.332
5x = 4.165

6x = 4.998
7x = 5.83
8x = 6.664.

With me so far? Now letâs drop these values into the right side of our equation. The result looks like this:

4 + (4 + .833) + (4 + 1.666) + (4 + 2.499) + (4 + 3.332) + (4 + 4.165) + (4 + 4.998) + (4 + 5.83) + (4 + 6.664).

Or, after doing the addition:

4 + 4.833 + 5.666 + 6.499 + 7.332 + 8.165 + 8.998 + 9.831 + 10.664.

Those are the intervals between our guides. The first guide is 4 inches below the tip-top, the second guide is 4.833 inches below the first guide, the third is 5.666 inches below the second, and so forth. If we keep a running total, we can make a guide-spacing table for our rod:

| Guide | Distance from Tip-Top | Distance from Previous Guide |
|---|---|---|
| 1 | 4 inches | na |
| 2 | 8.833 inches | 4.833 inches |
| 3 | 14.499 inches | 5.666 inches |
| 4 | 20.998 inches | 6.499 inches |
| 5 | 28.330 inches | 7.332 inches |
| 6 | 36.495 inches | 8.165 inches |
| 7 | 45.493 inches | 8.998 inches |
| 8 | 55.324 inches | 9.831 inches |
| 9 | 65.998 inches | 10.664 inches |

Only someone with far too much time on his hands is going to measure guide spacing to the nearest thousandth of an inch. Since weâre busy folk, letâs round off each figure to the nearest $^{1}/_{8}$ inch; most rod manufacturers arenât even that precise. When we round off the numbers, we get:

| Guide | Distance from Tip-Top | Distance from Previous Guide |
|---|---|---|
| 1 | 4 inches | na |
| 2 | 8⅞ inches | 4⅞ inches |
| 3 | 14½ inches | 5⅝ inches |
| 4 | 21 inches | 6½ inches |
| 5 | 28⅜ inches | 7⅜ inches |
| 6 | 36½ inches | 8⅛ inches |
| 7 | 45½ inches | 9 inches |
| 8 | 55⅜ inches | 9⅞ inches |
| 9 | 66 inches | 10⅝ inches |

And there we go: pretty guides all in a row. Neat, eh?

We can use the equation for any rod, regardless of length or the number of guides, as long as we adjust it to supply a quantity for each interval. For a 9-foot rod with 10 guides, the first of which is 4 inches below the tip-top, the right side of the equation would go like this:

4 + (4 + x) + (4 + 2x) + (4 + 3x) + (4 + 4x) + (4 + 5x) + (4 + 6x) + (4 + 7x) + (4 + 8x) + (4 + 9x).

That gives us 10 intervals or spaces between guides, counting the space between the tip-top and first guide. For a 7-foot rod with eight guides, weâd use this on the right side of the equation:

4 + (4 + x) + (4 + 2x) + (4 + 3x) + (4 + 4x) + (4 + 5x) + (4 + 6x) + (4 + 7x).

The number on the left side of the equal signâthe sum of all the intervals, that isâis always the length of the rod from the tip to the stripping guide. That gives us the total distance over which we shall spread our guides.

This simple equation lets us deal with any guide-spacing job. An odd-sized blank isnât a problem; neither are customized stripping-guide placements. If we wanted to build a 7-foot, 8-inch rod for a youngster who needed the stripping guide 26 inches above the bottom of the reel seat, and decided that the rod will have nine guides with the first 3Â¾ inches below the tip-top, we can create an equation, plug in the numbers, do the math, and solve for *x*. Then we do some more arithmetic, and end up with a guide-spacing table for that very unusual rod.

Actually, we end up with a starting point. A fast-action blank, for instance, might have a relatively soft tip and a

considerably stiffer midsection and butt. If we put the first guide 4 inches below the tip-top, and then used the guide spacings produced by our equation, weâd probably build a very nice rod with which we could throw a lot of line and subdue any fish we hooked. But if we used our first table as a starting point and then taped on the guides, test-cast the rod, and tinkered with the guide spacing, we might produce a rod that works just a little better.

Iâve found, however, that with many blanks you can safely use the measurements produced by our algebra. The improvement produced by taping on the guides, test-casting the rod, and making adjustments will be very slight, if indeed itâs noticeable at all. Fanatical rod builders will regard the foregoing statement as the basest heresy, but the truth is that very few anglers cast well enough to notice a 1/8-inch difference in guide placement. With the majority of graphite blanks, a typical angler can put the first guide 4 inches below the tip-top, employ our equation, and make a delightful rod. Appendix B has equations for most of the popular rod lengths.

You might discover that your first guide-spacing table puts one guide astraddle the ferrule, or very close to the end of the female half of the ferrule. The more sections a rod has, the greater the likelihood that you will run into this problem. Itâs time to cheat: You canât put half a guide on the tip section and half on the butt, and you donât want to wrap less than an inch of a female ferrule. Move the guide up the blankâdo not move it downâand tinker with the spacing of the rest of the guides to take up the extra space. Adjusting each of them a fraction of an inch will take care of the problem.

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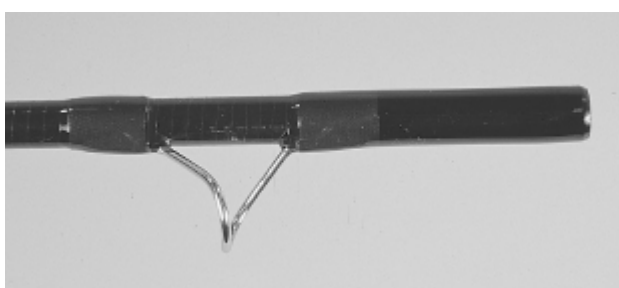

**Itâs perfectly okay to locate a guide on a female ferrule, as long as you leave enough room to wrap at least an inch of the ferrule.**

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**Many rod builders still use thermoplastic ferrule cement to mount tip-tops because this sort of glue makes it easy to remove and replace a damaged or worn top. Your other choice is five-minute epoxyâeasier to use and stronger, but also harder to remove.**

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**MOUNTING TIP-TOPS**

The tip-top is fastened to the blank with glue. To ensure a secure bond on a rod with a glossy finish, measure the distance the tip-top will occupy on the end of the blank, *lightly* sand the area with extra-fine sandpaper, then clean the end of the blank with a rag moistened with alcohol. Glue sticks better to a surface with some âtoothâ than to a slick, shiny finish. On a blank with a matte finish, simply clean the end with alcohol.

A tip-top is subject to wear and accidents, and should be mounted with glue that allows it to be removed. You have two choices: old-fashioned thermoplastic ferrule cement or five-minute epoxy. *Never* mount a tip-top with superglue or slow-

curing epoxy. If it becomes damaged or worn, you wonât be able to remove itâyouâll have to cut off the end of the blank.

Five-minute epoxy provides a very strong bond, and, in theory, you can remove a tip-top mounted with it by heating the metal tube with a candle, alcohol lamp, or soldering gun; the heat breaks down the glue. But, depending on the epoxy, you might have to use a lot of heatâenough, perhaps, to damage the end of the blank. As an experiment, I employed my usual brand of five-minute epoxy (Devcon) to glue one piece of brass tubing inside another, slightly wider piece. The length of the glue bond was about an inch. After the epoxy had cured, I tried to break the bond with heat, using the flame of a butane cigarette lighter. I discolored the brass and burned my fingers but never managed to separate the two pieces of tubing, even by yanking on them with pliers. Had the thinner piece of tubing been a rod-blank, I surely would have melted it.

On the other hand, I know that I can always melt old-fashioned ferrule cement with a candle, and Iâve never had a fly-rod top mounted with thermoplastic cement come unstuck in the field. And so Iâll buck contemporary thinking and recommend that you use thermoplastic ferrule cement to mount your tip-tops. Nearly all rod-building supply houses carry this stuff; itâs also found in tackle shops and in sporting-goods stores that sell archery equipment.

To use thermoplastic cement, heat the end of the stick by holding it against the side of a flame; a candle or alcohol lamp will do. Rotate the stick as you heat it; you want to make a blob of hot, gooey cement on the end of the stick. Then, as quickly as you can, smear some of the hot, soft cement on the end of the blank and slide the tip-top into place. You will have already found and marked the spine of the tip section; align the tip-top with the spine mark before the cement hardens. Once the tip-top is aligned, blow on it to cool and set the cement. A little extra cement will have oozed out of the bottom of the tube; scrape it off the blank with your thumbnail. Itâs hard to remove, but not impossible.

**To use hot-melt ferrule cement, mark the area that the tip-top will occupy with a piece of masking tape. Melt the end of the cement stick, and apply the hot goo to the blank.**

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**Before the hot cement cools and hardens, slide the tip-top onto the blank, aligning it with the spine mark. Remove the masking tape and scrape off excess cement with your thumbnail.**

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Donât panic if you canât get the tip-top aligned on your first try. Hold the tube against the *side* of your candleâs or alcohol lampâs flame, using your fingers as heat sinks for the blank and the ring of the tip-top. That is, pinch the blank between the thumb and forefinger of one hand, and the ring of the tip-top between the thumb and forefinger of the other hand. Youâll burn your fingers (and automatically pull away from the flame) before you damage the blank or the ring.

Warm up the tube until the cement softens, and then align the ring with the spine mark on the blank.

Ferrule cement is cheap, and one stick will fasten tip-tops to many rods. If youâve never used the stuff, practice heating it and smearing it on a piece of coat-hanger wire before you try to mount a tip-top. Youâll find that you have enough working time, but not much to spare.

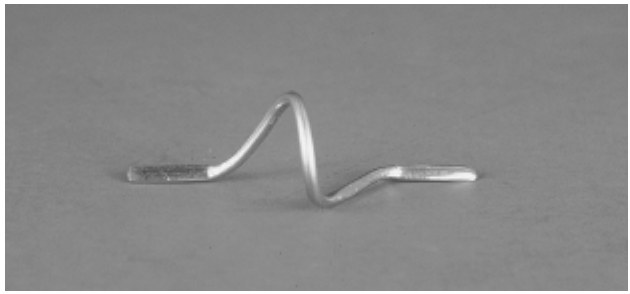
**PREPARING GUIDES**

When you wrap a guide on a rod, you want the thread to climb neatly from the blank up onto the foot of the guide, forming a smooth little hill. You donât want the end of the guide foot poking out of the wrap; the sharp protrusion would look hideous, and it might damage the coating of your fly line. To make a neat job of each wrap, youâll probably have to begin by dressing the feet of the guides.

The feet of many snake guides are cut off square. Before you can use the guides, you have to file or grind each foot, forming a ramp that slopes down to the blank. A fine, triangular machinistâs file makes quick work of guide feet; I swear by Nicholson files, which youâll find in good hardware stores.

File the end of the guide foot at an angle, taking care not to nick the loop of the guide. (If you slip and scratch the loop, throw the guide away. It never hurts to have a few spare snake guides on hand.) Then round off the sides of the ramp; you donât want to leave any sharp edges that might nick the thread as you wrap the guide to the blank.

You can also dress a guide foot by rubbing it back and forth on a medium oilstone. Grind the end of the foot at an angle, and then round off the corners of the ramp. Dressing guides on a stone is slow work, but it makes a very neat job and leaves no tiny burrs.



**The feet of some snake guides are cut off square. Before wrapping the guides, you must dress the feet to make them smooth, rounded ramps. The foot on the right has been prepared.**

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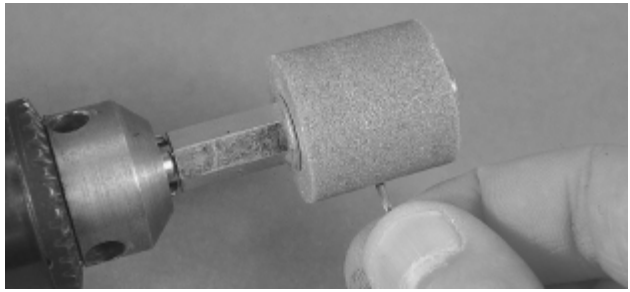

**If you work carefully, you can use a small grinding wheel mounted in a drill to do most of the work of dressing guide feet. A good file works just as well, but requires more elbow grease.**

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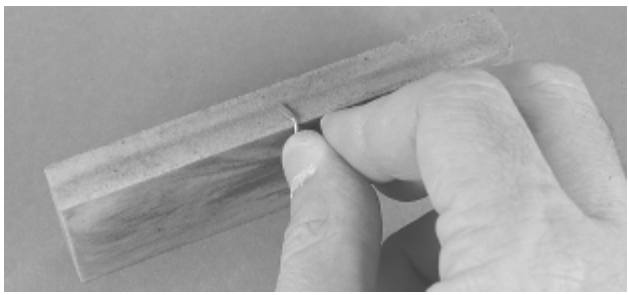
Donât use a high-speed bench grinder to dress guide feet. A motorized grinder might overheat the guide, drawing the temper from the metal and ruining it. If you insist on using power tools (and what red-blooded American doesnât?), buy a small grinding stone that will fit in the chuck of your electric drill. Most hardware stores sell such grinders. Lay the drill on your workbench, run it at about half speed, and, with very

light pressure, grind each guide foot at an angle. Hold the guide with your fingers, not with a tool; if it starts to overheat, youâll know right away. Although you can use your drill to grind the initial angle on each guide foot, youâll still have to employ a fine file or an oilstone to round off each ramp. (And remember *always* to wear eye protection when you use a drill-mounted grinderâthe man-made stone might fracture, throwing chunks of synthetic rock in every direction.)



**After filing or grinding guide feet, polish them on an oilstone or a piece of fine emery cloth.**

After filing or grinding the feet of my guides, I generally polish them with a rolled-up piece of crocus cloth. This extra step guarantees that I wonât cut the thread on a tiny burr I overlooked.

Some authorities recommend dressing each guide foot to a knife edge. A foot that tapers down to nothing might simplify the job of making a neat wrap, but Iâm not comfortable with the idea of a razor-sharp bit of steel digging into the rod blank every time I cast. And so, after polishing each guide foot, I use a piece of crocus cloth or a fine oilstone to break the edge, removing just the tiniest amount of metal. I like the tip of a guide foot to be no thicker than half the diameter of the wrapping thread, but I donât want it as keen as the edge of a razor.

Most single-foot guides and stripping guides are manufactured with tapered feet, reducing the amount of filing

and polishing you have to do. But you still have to dress them. I file each foot to make the angle shallower, and then polish the feet with crocus cloth to make nice smooth ramps.

After dressing your guides, clean their feet with a rag or paper towel moistened with alcohol. Metal residue or oil left on the feet will show up as ugly blotches in the wraps, and might prevent the finish from adhering to the thread. Snake and single-foot wire guides can be cleaned by dropping all of them into a 35mm film canister containing an inch or so of alcohol, and then shaking the film can. Stripping guides and single-foot guides with inserts should be wiped clean one at a time.

**MEASURING AND MARKING GUIDE SPACING**

For years, I measured guide spacings one at a time, struggling to put each guide the right distance from the preceding one while simultaneously aligning it with the guides already attached to the blank. It never occurred to me that I could mark all the guidesâ locations on the blank, and then worry only about alignment as I put each guide on its premarked spot. Metaphorically, this may explain why I remain the sort of chap who doesnât have to worry about tax shelters and investment strategies.

But even a dolt eventually catches on, and now I mark the the spacing of all my guides before wrapping the first one. I do this by putting a sliver of masking tape on the spot where the center of each snake guide will go, or on the location of the ring of each single-foot guide. Other rod builders mark their blanks with chalk or grease pencils. But you have to erase chalk or grease pencil; I find it easier to peel off a thin piece of masking tape.

**After determining the guide spacing, mark the location of each guide with a sliver of masking tape. This way, you have to worry only about alignment as you wrap each**

**guide.**

Measure the location of the first guide from the bottom of the ring of the tip-top, and mark the spot with a sliver of masking tape. You can measure the locations of the second and subsequent guides from the tip-top, using a tape measure, or you can measure the interval from each guide to the next. I prefer the latter method; itâs easier than trying to keep the end of a tape measure aligned with the tip-top.

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**W**eâve looked at most of your choices, but not all. Study your catalogs, and donât hesitate to ask questions. Take your time measuring guides and testing their locations. You have no control over the design of the blank you bought. The reel seat will not greatly influence how the rod casts. You can get used to almost any handle. Guides, however, have a lot to do with how a rod acts and are the components over which you have the most control.

# 5

# WRAPS

When you show your new, handmade, world-beater fly rod to your buddies, you can bet that every one of them will do two things. First, heâll sight down the blank to see if you put the guides on straight. Then heâll examine the wraps, checking for gaps or other evidence of ham-handed workmanship. Isnât that what you do when you look at a new rod?

And so you might as well make a neat job of the wraps. Although sloppy wraps will keep guides on a rod, they are an eternal source of embarrassment and regret to the guy who made them. You can make tidy wraps very easily and with only a few simple pieces of equipment.

## ROD-WRAPPING THREAD

Many bamboo-rod artisans wrap guides with silk thread, as well they should. On a fine cane rod, nothing matches silkâs beauty. But we amateurs who work with less patrician materials use nylon thread on our rods. Nylon looks fine, holds a guide as firmly as a big pickerel hangs on to a frog, and will never rot. If you want to, you can even give nylon most of the lovely translucence of silk.

Nylon rod-wrapping thread has a three-ply, twisted construction; it looks like miniature rope. Gudebrod dominates the rod-thread market to such an extent that most rod makers have never used another brand, though other brands do exist.

Rod-wrapping thread comes in several sizes, but most fly-rod builders use size A. You can use size 00 thread, which is thinner than A, on a short rod for a light line; the thinner thread produces slimmer wraps that look nice on a very slender tip section. I suppose someone could make a case for using size D thread, which is pretty stout stuff, on a heavy-duty rod for offshore or tarpon fishing, but I find it hard to imagine a situation in which size A thread wouldnât have enough strength. You would bend or break most guides before you could tear them loose from good wraps made with size A thread. For all but the very lightest fly rods, then, you can buy size A nylon thread.

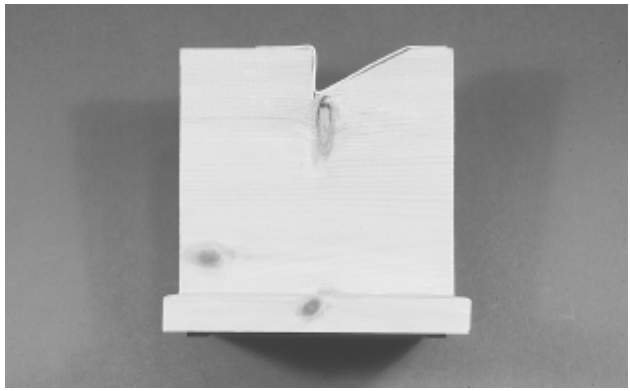
**WRAPPING STANDS**

A friend of mine, a bamboo artisan with a well-deserved following, uses the simplest rod-wrapping setup Iâve ever heard of. When itâs time to put guides on a rod, he parks himself in a comfortable chair, puts a cup or small bowl next to one of his legs, drops his spool of thread into it, runs the thread under his thigh, rests the rod on his lap, and merrily wraps the guides. To adjust the thread tension, he shifts the thigh beneath which the thread runs. Since the cup comes from the kitchen cabinet, my friendâs total investment in rod-wrapping equipment is zero, unless you count extra wear and tear on one trouser leg and the upholstery of the chair. He does lovely work.

So much for fancy equipment. Or any equipment at all.

Most of us, though, are happy to have a few pieces of basic rod-wrapping gear. Foremost among them is a set of stands in which to rest the blank while you turn it to make each wrap. If youâre in the mood to spend money, youâll find all sorts of rod-wrapping devices in catalogs and full-service tackle shops. A basic but eminently serviceable wrapping jig will set you back $50 or less. A super-deluxe rig with ball-bearing blank supports can cost a couple of hundred bucks. Your catalogs illustrate and describe these devices, any of which will help you make excellent rods.

Years of penury, however, taught me to pinch every penny until Lincoln whimpers for mercy, and I use rod-wrapping stands made of lumber left over from one of the few homeowner projects I managed to finish. You can build your own with a piece of 1-by-6 pine and a handful of wood screws.



**Hereâs a homemade wrapping stand built of 1-by-6 lumber. You can make yours larger or smaller, as you wish. You need at least two such stands; with long rod sections, it helps to have three stands.**

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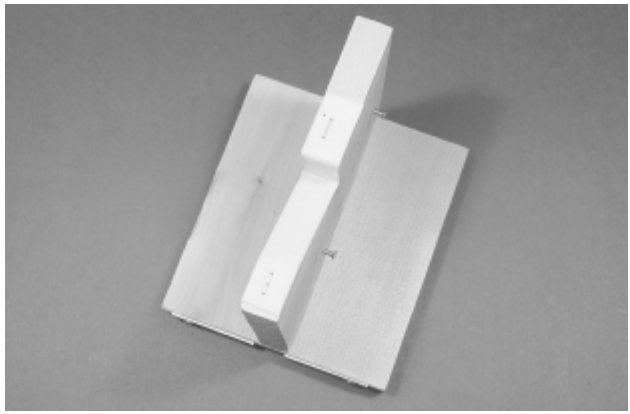

**A piece of smooth plastic in the notch of each wrapping stand makes a bearing surface on which to turn the rod blank. Polyethylene or, if you can find some, Teflon is ideal. Force the plastic to the shape of the notch and fasten it in place with a staple gun.**

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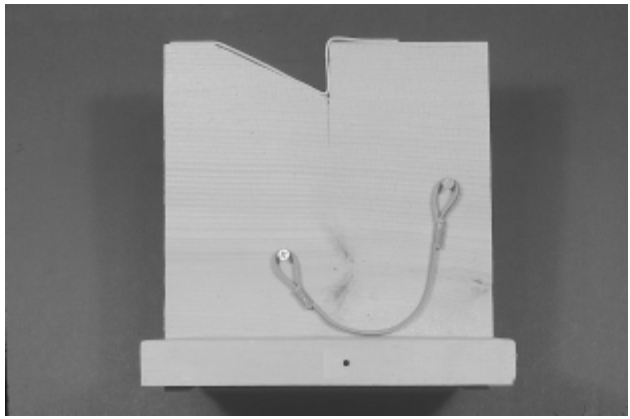
Cut four pieces from the 1-by-6 board, each 8 to 12 inches long. Two of the pieces will become the bases of your stands; the other two will become the uprights. In the top edge of each upright, cut a V-shaped notch at least an inch deep. Fasten each upright to a base with three wood screws that pass through countersunk holes in the base. The rod sits in the notches while you turn it to wrap the guides.

Bare wood can leave tiny scratches in the finish of a rod blank, and so you need to line the V-notches with something soft or slippery. For many years, most rod builders used felt. Some years ago, Boyd Pfeiffer, a noted angling author and a craftsman before whose skill I bow, hit on the idea of using polyethylene to line the notches in rod-wrapping stands. Polyethylene is among the slickest of plastics, and makes a superb bearing surface in a wrapping stand. Boyd gets his by slicing strips from milk jugs. When he shared his idea with me, I was working in a converted mill building that also housed a plastic-bag company. An inspection of the trash on the loading dock turned up a long strip of heavy polyethylene. I cut pieces about 4 inches long and an inch wide, forced them to the shape of the notches in my rod-wrapping stands, and fastened them in place with staples. Crude and ugly, maybe, but also cheap and serviceable.

These days, I have slightly fancier wrapping stands. A while back, a friend gave me a couple of feet of thick Teflon left over from some aerospace project he was working on. I made another pair of homemade wrapping stands and lined their notches with the scrap Teflon, which is, of course, even slicker than polyethylene. Antiskid rubber feet on the bases were cut from foam-rubber weatherstripping. On the front of each standâs base, I attached two small mending plates, each secured with a single screw. When I use the stands, I flip the mending plates down so that they catch on the front edge of my worktable, keeping the stands from sliding as I wrap a rod. With the mending plates flipped up and out of the way, my wrapping stands are easy to store.



**Two small wood screws on the side of the upright can hold a rubber band used to keep the rod stationary when you donât want it to turn.**

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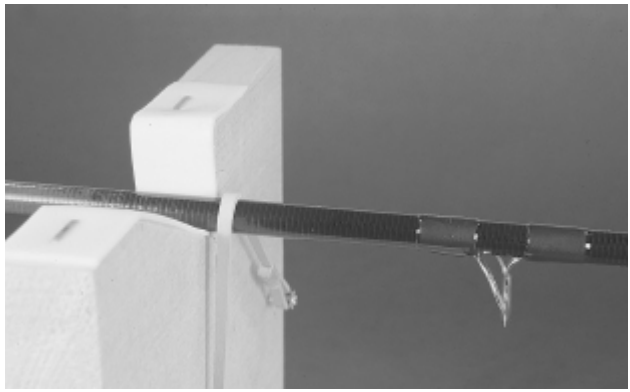

**Hereâs the rubber band in use. This feature isnât used when wrapping the guides, but it comes in handy later, when you apply the finish and want to rotate the rod half a turn every 10 minutes. The rubber band keeps the blank in position after you turn it.**

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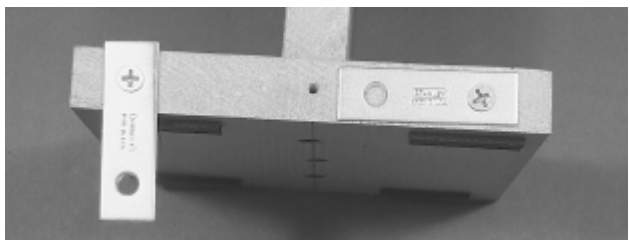
By my standards, those are pretty slick tools. But theyâre

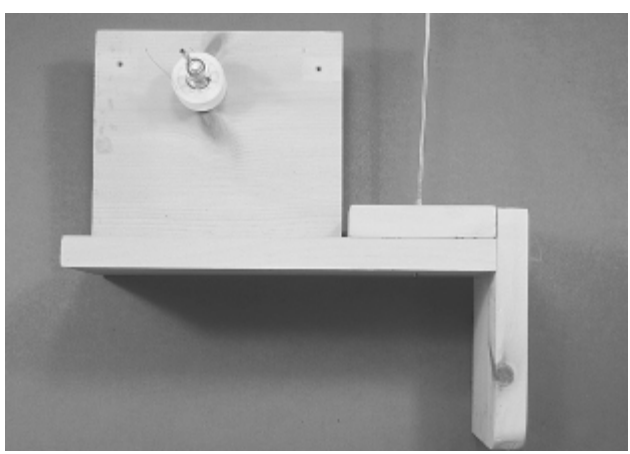
made of scrap lumber, other peopleâs trash, and leftover hardware. Any rod builder on a budget can fabricate wrapping stands for a total cost of between nothing and $10.

**THREAD-TENSION DEVICES**

Your thread needs to be tight as you make wraps. Weâll deal with how tight in a little while; for now, letâs worry about how to maintain tension on rod-wrapping thread.



**Two small mending plates, each attached to the base with one screw, hang over the edge of your workbench and keep the wrapping stand from sliding as you work. Flip the plates down, like the one on the left, when you use the stand; flip them back up (right) for storage.**



**One of my homemade thread-tension devices. Itâs made of scrap 1-by-6 lumber and a few pieces of hardware. The base of this one is about a foot long. A cleat on the end holds it in place on the far side of the worktable. The tensioner is on the upright part.**

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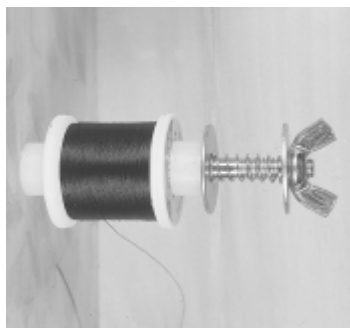

**An overhead view of the tensioner. The spool rides on a Â¼-inch shoulder bolt epoxied in a hole in the upright piece of lumber. Washers, a nylon spacer or two, a small compression spring, and a wing nut provide infinitely adjustable tension.**

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The simplest thread-tension device is a big book. You drop the spool into a cup or soup bowl, and then run the thread through a book and to the rod. To increase the thread tension, stack other books on top of the volume that serves as the thread clamp. Assuming you own books other than this one, you can construct such a device for nothing. I used books for many years with good results; some rod builders never employ anything more complicated than a stack of books to put tension on thread.

Use a good book for the thread clamp. The quality of the literature doesnât matterâyou could even use a book on bait fishingâbut the quality of the paper and printing does. A disposable publication such as a telephone directory might

leave your thread besmirched with ink, which, of course, would result in ugly wraps. The complete works of Shakespeare helped me wrap many rods, until my elder daughter borrowed it and forced me to resort to artistically inferior volumes. Dictionaries and old, unread college textbooks also work fine. Any hardcover tome will do. Generally, two or three other books stacked on top of it will provide adequate tension. (And thatâs a hint about how tight your thread should be. Run it through the middle of a volume such as *Websterâs New World Dictionary* or *The American Heritage College Dictionary;* somewhere in the Ms will do. Stack two similarly large books on the dictionary. Pull on the thread to get a feel for its tension. Thatâs about as tight as you need.)

The drawback of using a book as a tensioner is that paper can abrade thread. Once or twice during the course of building a rod, you might notice a fuzzy, abraded spot on a nearly completed wrap, at which time you will have to undo the wrap and make another. Many rod makers, therefore, graduate to more sophisticated equipment. Even I have.

Rod-building catalogs offer a variety of thread-tension gadgets, most of which work quite well. Some squeeze the thread between polished discs; others apply pressure to the spool. I prefer the latter approach, since it avoids the possibility of abrading the thread. And, characteristically, I prefer to build my own thread-tension hardware.

My tensioner consists of several hunks of scrap 1-by-6 and a handful of stuff from the hardware store. The base measures about a foot long. A cleat on one end hangs over the far edge of my workbench and keeps the device from sliding toward me as I work. An upright piece of 1-by-6 fastened to the middle of the base serves as a bracket for the Â¼-by-4-inch shoulder bolt on which the spool turns. An assortment of washers and nylon spacers, a compression spring, and a wing nut create friction on the spool of thread. The accompanying photos will give you the idea; the exact dimensions donât matter. Itâs a handy, infinitely adjustable device that cost less than five bucks and cannot damage the thread as I make wraps.

After I built my first thread tensioner, I added a refinement that makes it easier to start wraps and correct mistakes. On the far side of the bracket that holds the spool, I attached a small

piece of scrap lumber to the base. Then I drilled a small hole through both pieces of wood and shoved a hunk of metal tubing into the hole. I used thread to bind together two pieces of spring-steel wire, each about 10 inches long, and inserted one end of the double wire into the tubing. On the top end of the wires, I glued a ceramic spinning-rod tip-top.

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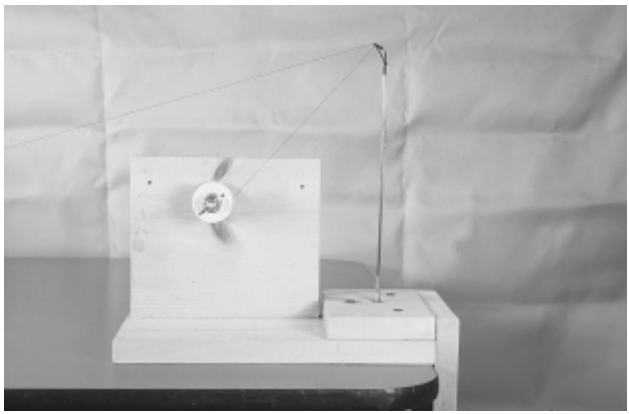

**Hereâs my favorite part of the homemade tensioner. Tie two or three pieces of piano wire together with rod-wrapping thread. Glue a ceramic tip-top on one end. The other end of the wires goes into a piece of metal tubing glued into the base behind the spool of thread. Run the thread up through the tip-top on the wires, and then to the rod youâre building.**

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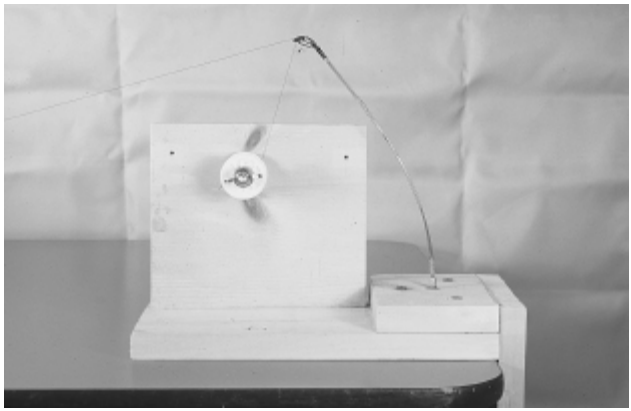

**As you make a guide wrap, increased tension on the thread will bend the wires, as shown in this photo. If you make an error and need to back off half a turn or so, the wires will straighten partway and maintain some tension on the thread. Without this gadget, the thread goes slack whenever you stop turning the rod blank.**

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The thread runs from the spool, through the tip-top mounted on the spring wire, and then to my rod. As I start a wrap, I pull the thread taut, but not too tight, putting a slight bend in the steel wires. This relatively light tension simplifies making the jam knot at the beginning of the wrap. As I rotate the rod, I put more tension on the thread and bend the spring wires more deeply, until eventually the spool begins to turn and Iâm working against the friction of the tensioner. If, halfway through a wrap, I make a mistake and need to back off half a turn to correct it, the spring wires straighten to maintain most of the tension. Itâs a wonderful addition to a basic thread tensioner, and one I wish I could say I invented. Again, the photos will show you the principle.

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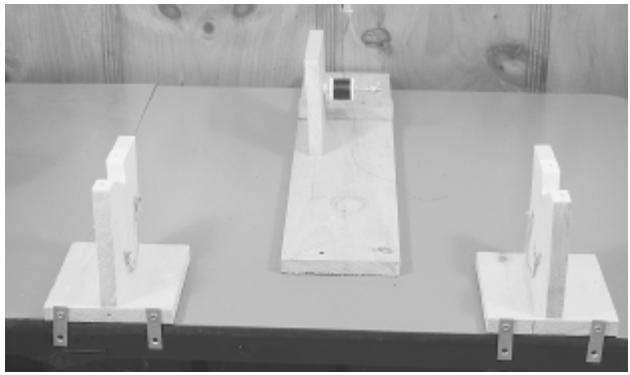

**A pair of homemade wrapping stands and a homemade tensioner set up and ready for use. Mending plates on the bases keep the stands from sliding back. The cleat on the far end of the tension device keeps it from sliding forward. All three tools, however, can instantly be moved from side to side.**

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**A HANDFUL OF HAND TOOLS**

You need only a couple of instruments to wrap guides: small, sharp scissors to snip the thread before you tie off a wrap, and a clean double-edged razor blade or an X-Acto knife to cut the tag end of thread protruding from a finished wrap. If you use razor blades, make sure that you wipe off any oil left on them by the manufacturer; a drop of oil on a guide wrap can keep the finish from sticking properly at that spot. A tissue moistened with alcohol or lighter fluid will remove oil from razor blades. If you use an X-Acto knife, make sure that you have a box of spare blades handy. Replace the blade often, since a dull blade might leave wisps of nylon where you cut the thread, and those barely visible fibers can produce a noticeable lump in the finish.

As you practice wrapping, youâll see that you sometimes need to push the thread on the rod one way or the other. You might not start a wrap exactly where you wanted to, the edge might be a little uneven, or you might produce a tiny gap halfway through a wrap. After finishing a wrap, itâs generally

a good idea to pack the thread by gently pushing on the outer edge of the wrap. If itâs clean and smooth, your thumbnail works fine as a thread pusher. Or you can use a dull tool such as a butter knife or the edge of a screwdriver blade that has been polished with emery paper. Whatever you use to push and pack thread, make sure that itâs clean and free of rough spots or burrs.

Many rod builders like to burnish wraps. This operation consists of rubbing a smooth object back and forth over a finished wrap. As you burnish the wrap, you pack the winds of thread a little more closely together, and you flatten them a little. The point is to remove tiny gaps that might become visible when you apply the finish. Gaps along the guide feet are easy to overlook, but they become painfully apparent when the finish hits the thread. Burnishing your wraps prevents such blemishes.

A polished knitting needle makes a good burnisher. Rod-building outfits sell burnishing tools made of metal or plastic. Mine came from Clemens Custom Tackle. Itâs a small steel rod polished on one end for burnishing and ground to a four-sided point on the other end for pushing and packing thread. I havenât purchased many tools made specifically for rod building, but Iâm very glad I bought this one.

Thatâs all you need: wrapping stands for the blank, some contrivance to put tension on the thread, small scissors, a razor blade or X-Acto knife, and something with which to pack and burnish the wraps. You probably already have some of this stuff, and you can make most of the rest for very little money. If youâre in a sweat to get started, you can find all the equipment you need in such catalogs as Clemens, Jannâs Netcraft, and Anglerâs Workshop.

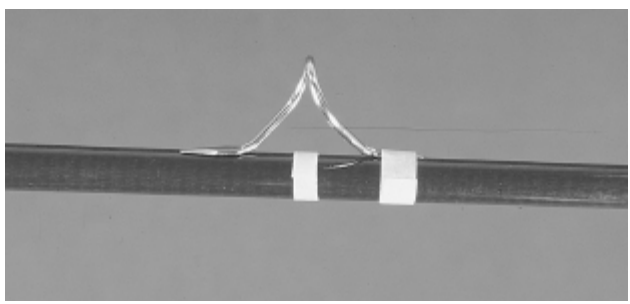
### TAPING AND ALIGNING GUIDES

After mounting the tip-top, mark the location of each guide with a sliver of masking tape. Use another small piece of masking tape to attach each guide to the blank when itâs time to wrap it. Donât tape all the guides to the blank and then start wrapping; you will certainly knock most or all of them out of alignment, which means that youâll have to tape them again.

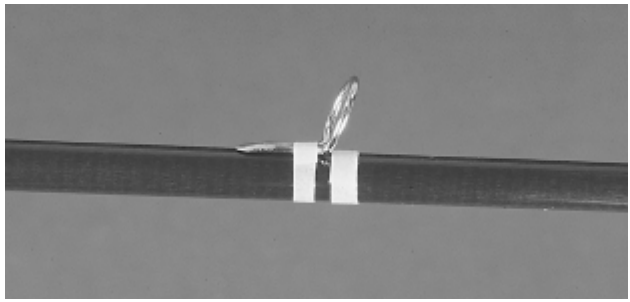
Tackle them one at a time.

Snake guides and stripping guides are easy: Stick one foot to the blank with tape, and then wrap the other foot. Single-foot guides are trickier. You have to use a very thin strip of tape to hold the guide in place while you begin the wrap and bind down part of the foot, and then you have to remove the tape to finish the wrap. Itâs easy to knock the guide out of alignment. Thereâs no solution to the problem; you simply have to be careful.

Before wrapping it, check the alignment of each guide by viewing the rod from several perspectives. First, hold the rod section with the guides on top, and sight down the blank. Then raise the rod and try to sight *through* the guides. Then rotate the blank until the guides are on the bottom, and view the section from above; the guides stick out past the sides of the blank, and they should stick out equally on both sides. Then turn the section around and repeat all three tests.



**Mark the location of each guide with a sliver of masking tape. Use another piece of tape to fasten one foot of a snake or stripping guide to the blank. Take care to align the guide with those already on the rod.**



**This is how to tape a single-foot guide to the blank, with the ring above the location mark on the blank. Itâs not a very secure arrangement, and you have to be careful not to nudge the guide out of alignment as you work.**

---

Thereâs no great skill involved in aligning guides, only patience. After wrapping one foot, you should be able to move a guide a little bit to correct a minor misalignment. (Thatâs another clue about thread tension.) Reconcile yourself to having to rewrap one or two guides on every rod because you failed to align them perfectly the first time; I usually do.

**PRACTICE WRAPS: STARTING, WINDING, AND STOPPING**

You donât have to tie any tricky knots to make a rod wrap. You begin by wrapping the thread over its own end, trapping the end against the blank and making a simple jam knot like that used to attach fly-tying thread to a hook. Itâs hard to begin a wrap perfectly neatly. Most of the time, the first several turns are slightly crooked on the blank, or they might not lie exactly next to one another, or they might be a little too far from or too near to the end of the guide foot. If the imperfections are slight, use your thumbnail to true up the wrap after youâve made half a dozen turns. Make another few turns, then clip the excess tag end of the thread. Then wrap merrily along, making sure that each turn of thread lies right against the previous one and that none of them climbs up onto the preceding turn.

As you near the end of the wrapâroughly speaking, when you think you have another seven or eight turns to goâstop

and lay a knotted loop of thread or light monofilament against the blank. This tie-off loop, as itâs called, can be made of rod-wrapping thread, 3X to 5X tippet material, or heavy, unwaxed fly-tying thread such as Uniâs Big Fly Thread. No matter what you use for your tie-off loops, make several of them before you begin a wrap; dropping your only tie-off loop onto the floor can ruin your mood.

Resume wrapping, winding the thread over the loop and binding it to the blank. When you reach the spot at which you want to stop, pin the end of the wrap tightly against the blank with your thumb. Push hard with your thumb; you donât want the wrap to loosen when you cut the thread. With your small scissors, snip the thread about 3 inches from the blank. Put down your scissors and poke the end of the thread through the loop. Grab the knotted end of the loop and pull on it, drawing the end of the thread under the last eight wraps (or however many you made over the loop). Keep pulling the loop until it comes free and the end of the thread is sticking out of the side of the wrap. Now you can let go with your thumb; you no longer need to keep the wrap tight against the blank. Give the end of the thread a tug, just to tighten the last couple of turns of the wrap a little more. Cut away the excess thread with your razor blade or X-Acto knife.

Thatâs about all there is to it. Making a wrap isnât a terribly difficult procedure, but it will feel awkward the first few times you do it. You have to cut the thread, poke it through the loop, and draw the loop out with one hand, since your other hand is employed pinning the end of the wrap against the blank. That takes a little practice.

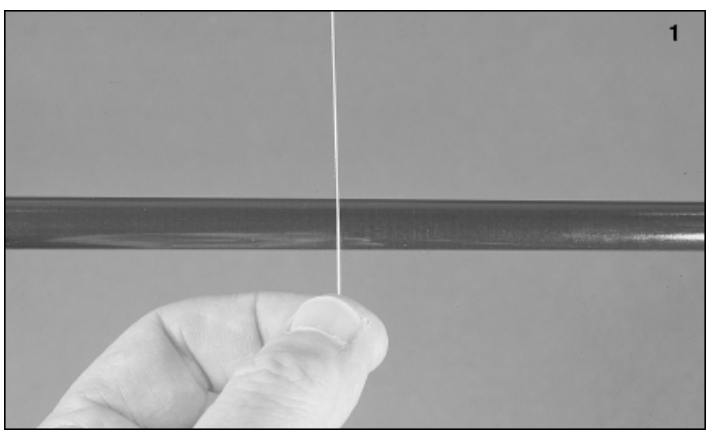
If youâve never wrapped a rod, practice making simple wraps on the butt section of the blank or near the fatter end of the tip section. Unless youâre blessed with uncommon dexterity, you will struggle to make your first several wraps. You might have a hard time getting the thread to jam against the blank, or maybe youâll lose control of the thread when you cut it. Donât get frustrated; every beginner has a hard time. The best way to learn the basic skills is to practice without having to worry about knocking a guide out of alignment or making the wrap too long or too short. Thread is cheap, and an hour of practice should make you ready to begin attaching

guides to your rod.

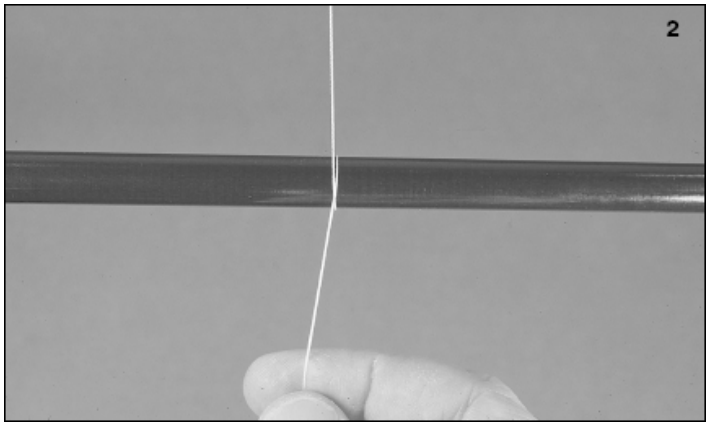
Before you practice, wash your hands. And I mean scrub themâdirt and skin oil on a wrap can show up as blotches when you apply the finish, and might even keep the finish from adhering to the thread. Pay particular attention to your fingernails. When I wrap a rod, I stop after every few guides and scrub my hands again.

Nylon thread stretches under tension, and the cumulative pressure of many turns of thread, each slightly stretched, holds a guide firmly in place. Donât set your thread tension too high. The thread has to be tight, of course, but it shouldnât be so tight that it makes a high-pitched *ping* when you pluck it. A dull *boink* is about the right note. After you make the jam knot at the start of the wrap, you should be able to rotate the rod with moderate effort; you shouldnât have to strain to turn the blank.

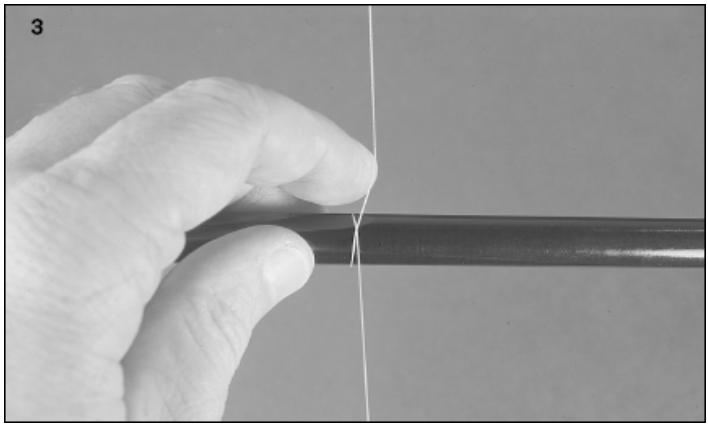
Letâs walk through a simple wrap from start to finish. For the sake of clarity, I used the butt section of a heavy fiberglass rod blank, and size D thread instead of the size A Iâd use on an actual guide wrap.



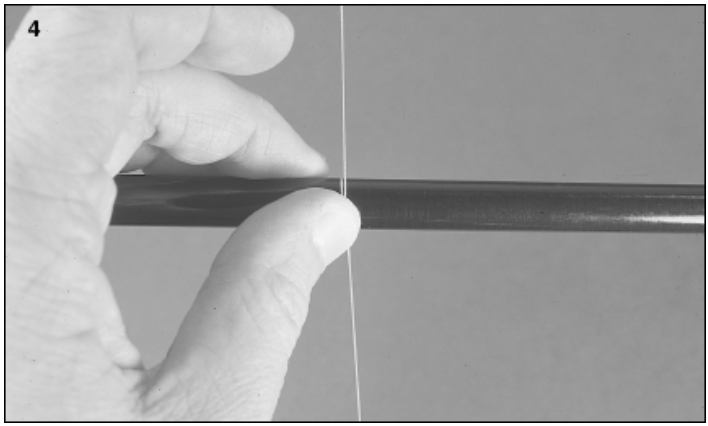

**Bring the end of the thread over the blank and pull it taut.**



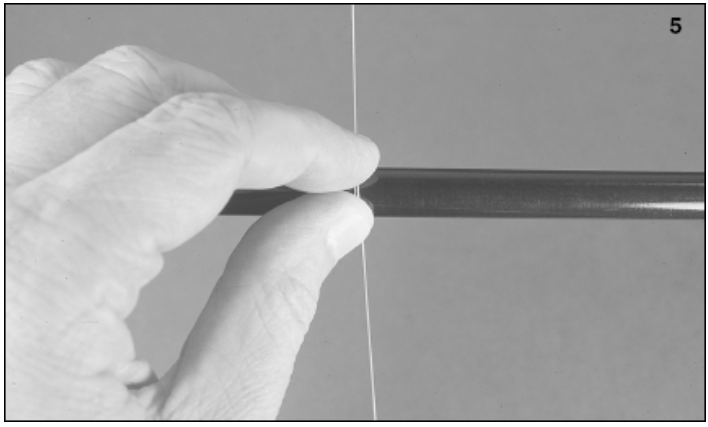

**Wrap the end of the thread all the way around the blank.**



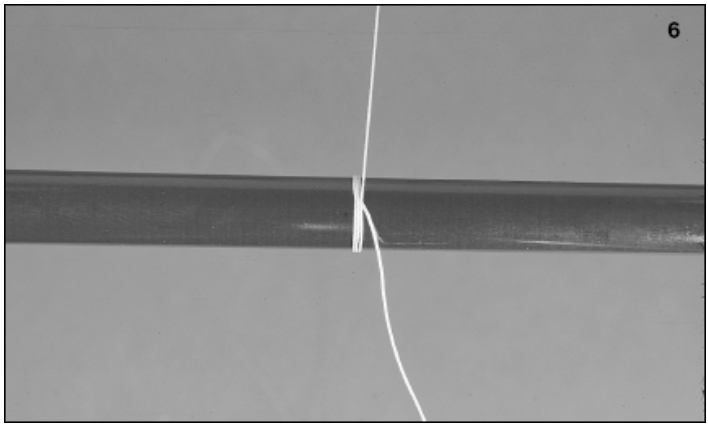

**Keep the thread taut with your right hand. With your left forefinger, push the working threadâthe thread coming from the spool, that isâa little to the right, so that you make a narrow X, as shown.**



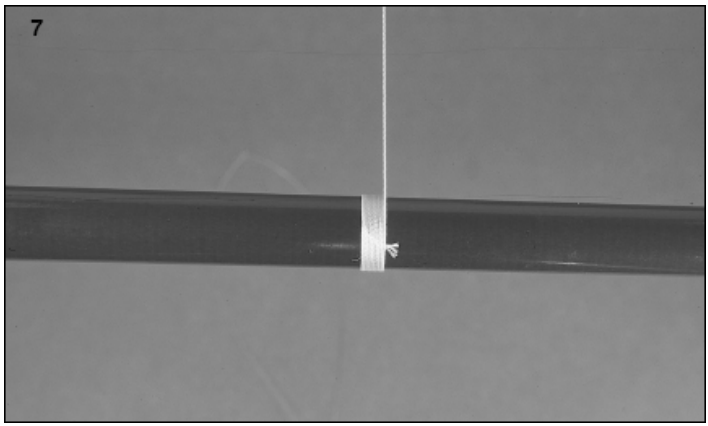

**As soon as youâve made the thread cross over itself, pin the X to the blank with your thumb.**



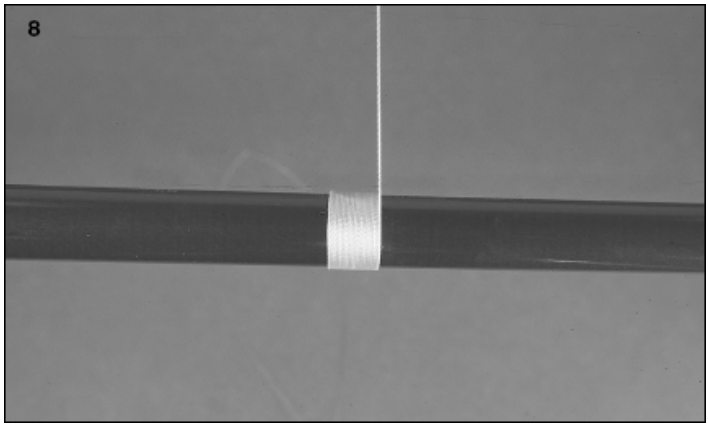

**Hold the first wrap and the crossover against the blank as you rotate the rod toward you. As you rotate the blank, your thumb will travel with it. Eventually, youâll have to move your thumb. Use another finger to pin the wrap against the blank, and move your thumb up to get a fresh grip on the wrap. You have to âwalkâ your fingers around the rod for the first couple of wraps, until the jam knot grabs the blank.**



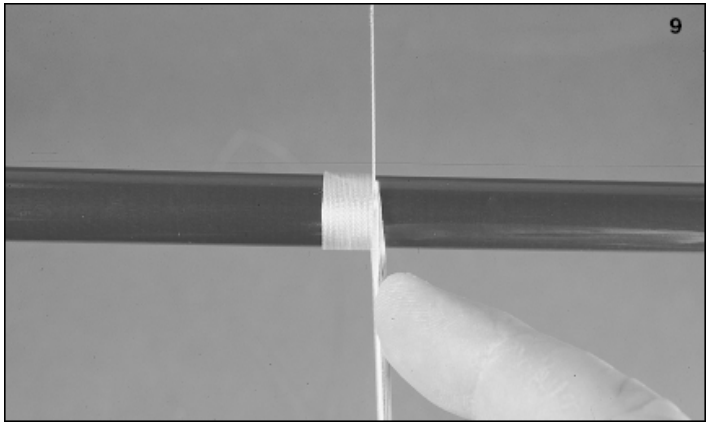

**Hereâs what you want to accomplish. The thread has been wrapped over its own end. After several turns, the jam knot produces sufficient friction to hang on to the blank.**




**Make another turn or two, and use your thumbnail to true up the wrap as you rotate the blank with your other hand. The end of the wrap should be square to the axis of the blank and even all the way around. After another couple of turns, you can clip the tag end of the thread.**

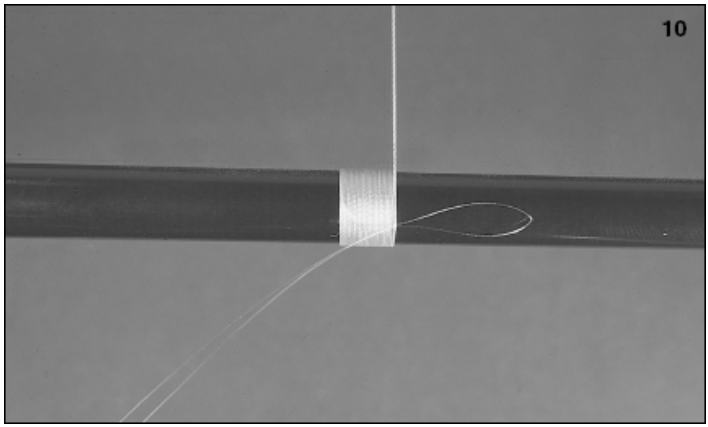



**Keep turning the blank. Each turn of thread should lie against the preceding one. You shouldnât have any gaps in the wrap, nor should the thread climb up onto the previous turn. Both of those problems are caused by the thread hitting the blank at an angle. If the thread is angled sharply toward the wrap (to the left, in this case), it will climb over the previous turn; if itâs angled away from the wrap (to the right, on this one), it will form a spiral. You want the thread square to the blank or angled ever so slightly toward the wrap. On a long wrap, you might have to shift the blank to maintain the correct angle.**

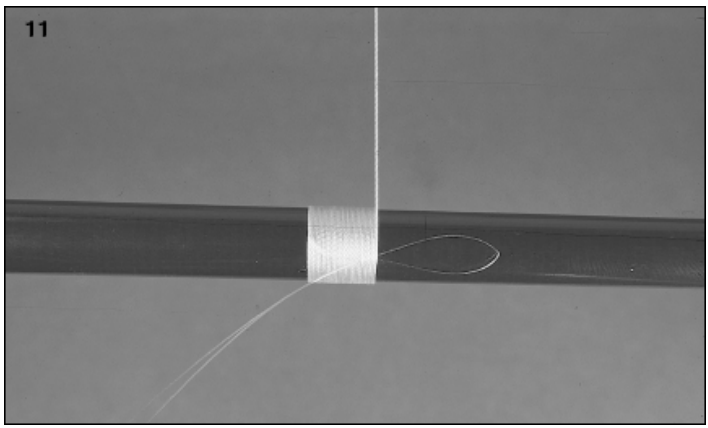



**Packing a wrap removes tiny gaps and produces a clean, even edge. You can pack the thread with your thumbnail**

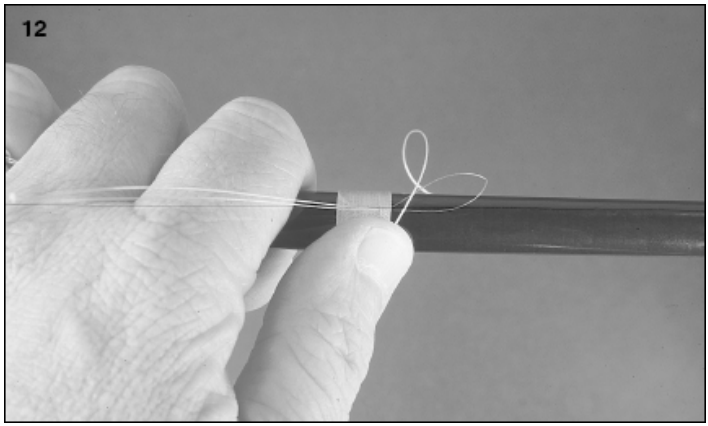
**or with a tool, as Iâm doing here. Whatever you use, simply push gently on the working edge of the wrap.**



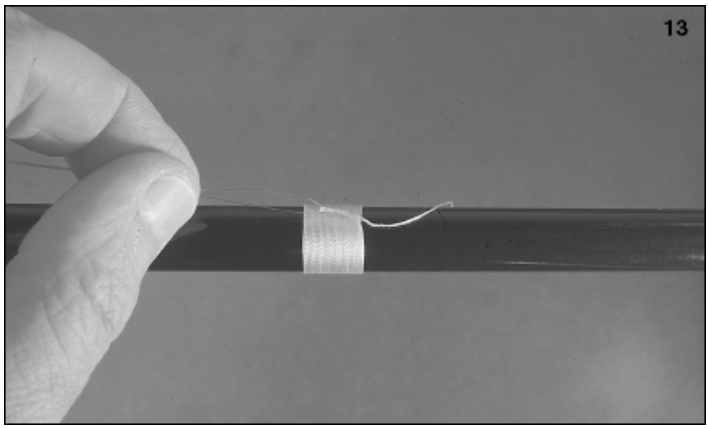

**Slide the tie-off loop under the thread and lay it against the blank.**



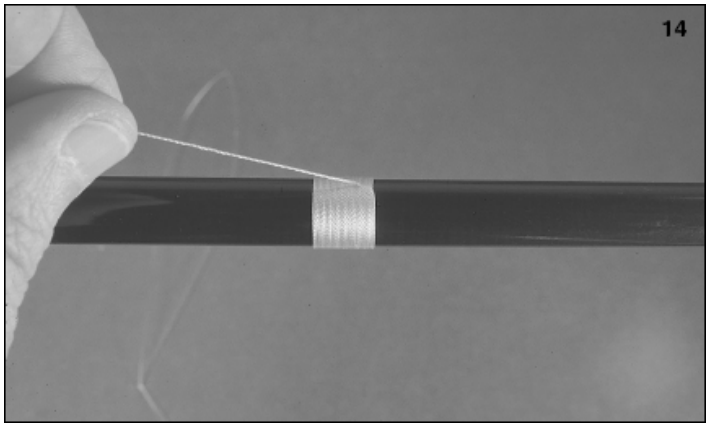

**Wrap over the tie-off loop for eight or nine turns.**



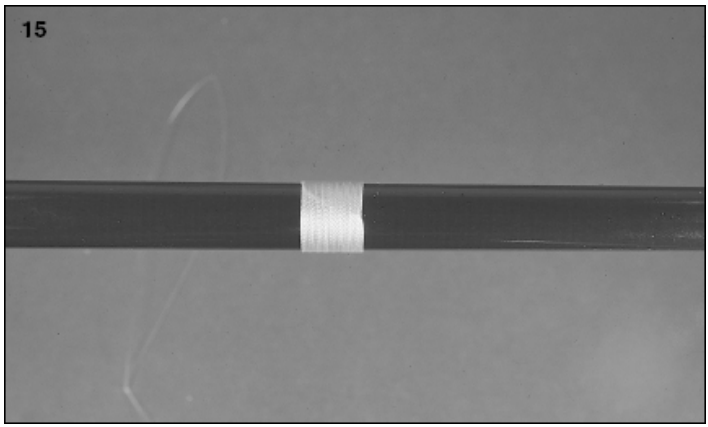

**Pin the thread tightly against the blank with your thumb. Push hard, or the wrap will loosen when you cut the thread. Cut the thread and poke the end through the tie-off loop. Do not relax your thumb.**




**Grab the knotted end of the tie-off loop and pull it, drawing the other end of the loop and the end of the thread beneath the wrap. When the tie-off loop exits the wrap, as it has here, you can let go of the wrap with your thumbâbut not a second earlier.**




**Keep pulling the tie-off loop until it comes free and the end of the thread is hanging out of the side of the wrap.**




**Pull the end of the thread taut. With a razor blade or X-Acto knife, cut the thread where it exits the wrap. You want to make a clean cut exactly at the surface of the wrap, without leaving a fuzzy stub, but you donât want to nick the wrap with the blade. Getting it right takes a little practice. Note the dimple on the right side of this wrap, where the thread was pulled under. A dimple can be removed by gently pushing against the edge of the wrap while rotating the rod.**

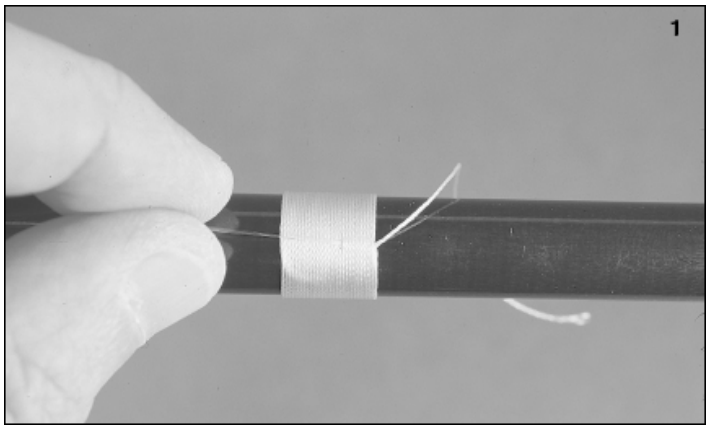
Those are the basic skills of rod wrapping. Before you try to

wrap guides, make at least a dozen practice wraps, trying to make each a little neater than the last.

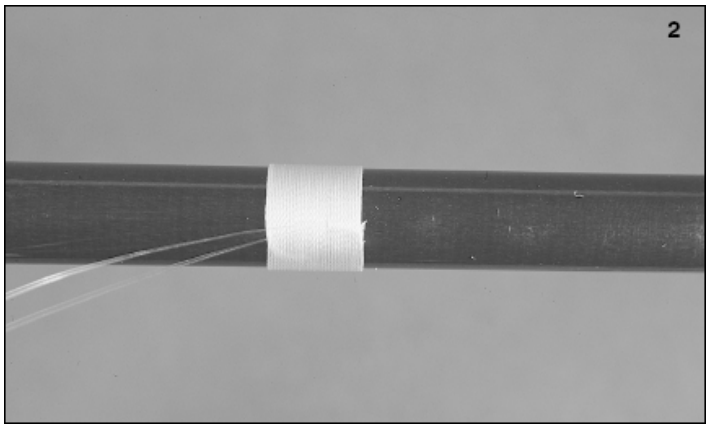
**ANOTHER TIE-OFF METHOD**

This basic wrap has one drawback. When you cut the thread after pulling it under the wrap, itâs possibleâeasy, actuallyâto leave a short, fuzzy stub or to nick the wrap. A tiny stub turns into a noticeable lump when you apply the finish, and a nicked wrap has to be cut off and done again.

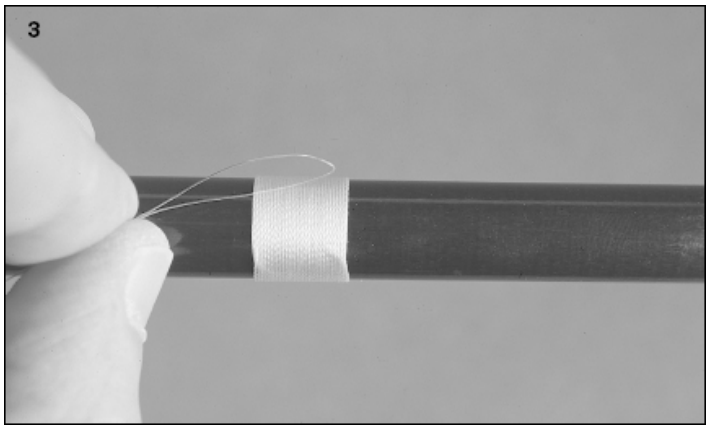
There is a way to tie off a wrap without having to cut the thread after pulling it under. Hereâs how to do it.




**Insert the tie-off loop about a dozen turns from the end of the wrap. As you did on the first practice wrap, pin the wrap against the blank with your thumb, cut the thread, and poke it through the tie-off loop. This time, though, do not pull the loop all the way. Stop pulling as soon as you draw the thread under the very edge of the wrap, as shown.**




**Cut the thread close to the wrap. Fine-tipped fly-tying scissors work well for this and eliminate the chance of accidentally nicking the wrap.**




**Pull out the tie-off loop. The end of the thread will be drawn under and will disappear beneath the wrap, leaving nothing for you to trim.**

Thatâs a neat trick, one that many rod builders use on most wraps. But it has problems of its own. You have to cut the thread at precisely the right spot, which means that you have to stop pulling the tie-off loop at exactly the right instant. If you draw the loop too far under the wrap before stopping to cut the thread, youâll end up with a stub sticking out of the

side of the wrap. Chances are pretty good that you wonât be able to trim the stub, which means that youâll have to cut off the wrap and make another. If you stop pulling on the tie-off loop too soon, you might cut the end of the thread so short that the wrap loosens.

But those arenât reasons to avoid trying this method. When you do it right, this trick makes for a very neat wrap. I have trouble pulling it off on short wraps near the tip of a rod; on the smaller guides, I generally pull the thread all the way through and trim it with a razor. On longer wraps, though, such as those on the butt section, I often employ the disappearing-thread trick. If you want to use it, practice before trying it on a guide wrap.

**GUIDE WRAPS**

A guide foot is secured to the blank with a simple wrap like the one above. But you add a number of things to worry about when you bring a guide into the act.

First, you have to avoid knocking or pushing the guide out of alignment as you wrap. After you tape the guide in place, you must work around it, taking care not to touch it until youâve secured one foot (assuming, of course, that it has two feet).

Second, you have to think about where you want to start the wrap. As a rule, the shortest possible wraps are best. Long guide wraps add unnecessary weight and stiffness to a rod. Furthermore, a long wrap is more likely than a short wrap to develop a crack in its finish at the end of the guide foot. The blank bends as you cast, but the steel guide foot doesnât. Eventually, that flexing fatigues the finish at the end of the stiff guide foot, and the finish develops a crack. Check out one of your older rods. Iâd bet youâll see fine white lines at the bases of the guide feet on the tip section. Those lines are cracks in the finish. They donât do any harmâuntil the finish starts to flake off, anywayâbut they make a rod look crummy.

With a little practice, youâll be able to start a wrap only four or five thread-widths before the end of the guide foot. The challenge is pinning the thread against the blank to make the jam knot without shoving the guide out of alignment. The solution is starting the wrapâthat is, crossing the thread over

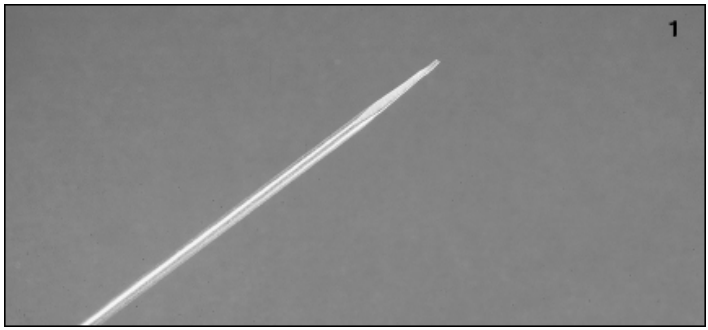
itselfâon the side of the blank opposite the guide. That way, the guide is out of the way as you trap that first crossover against the rod with your thumb.

Third, youâll run into a little problem as the thread climbs up onto the guide foot. The wrap will develop a small notch or dimple where the thread passes over the ramp on the end of the foot. As you rotate the blank and come up on the foot again, the thread might try to climb onto the previous turn. As you progress up the tapered foot, the problem becomes more acute. Stop about halfway up the ramp on the foot, and use a fingernail or a tool to pack the thread, evening the working end of the wrap and removing the troublesome dimple. Pack the thread all the way around the blank, except where it passes over the guide.

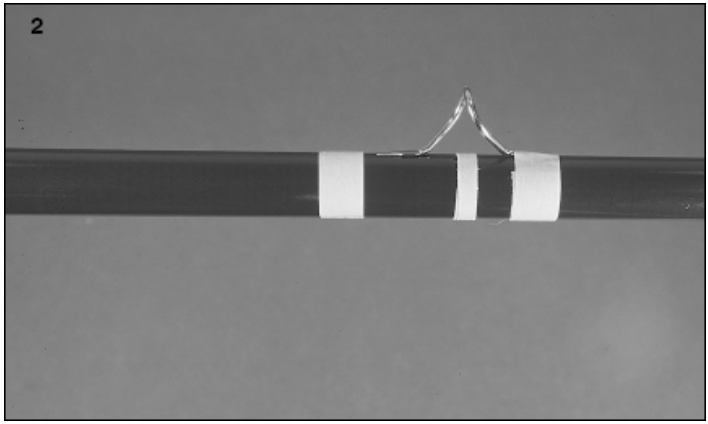
Fourth, you have to avoid tying off the wrap next to the guide foot. Thereâs a little tunnel on each side of the foot where the thread rises from the blank. If you put the tie-off loop in one of those tunnels, you wonât trap the end of the thread between the wrap and the blank. The wrap will unwrap before your eyes. Remember to begin and finish guide wraps on the side of the blank opposite the guides.

Fifth, both wraps on a two-footed guide should be the same length. A guideâs feet, however, are rarely identical, and you cannot use them to gauge the length of your wraps. Snake guides are low-tech affairs, and they typically have slightly uneven feet. Some stripping guides are made with one foot longer than the other. After you make the first wrap on a guide, measure it with a finely graduated ruler so that you know how long to make the other wrap.

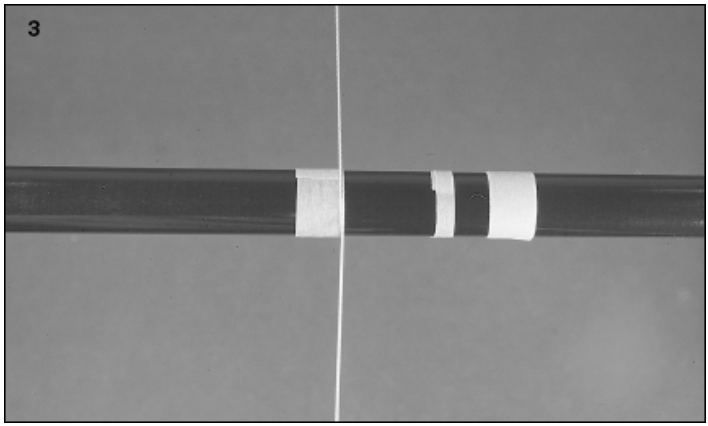
All of this stuff becomes second nature by the time you finish the tip section of your first rod. Letâs plod through a guide wrap so you can see how it works. While weâre at it, weâll add a few tricks to your repertoire.



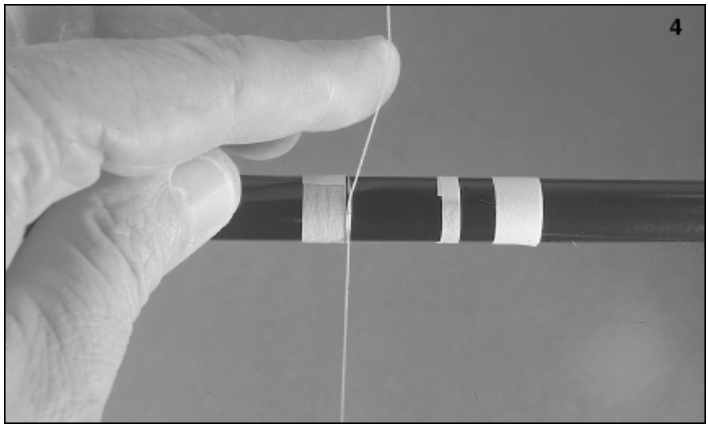

**This is my burnishing and thread-packing tool; it came from Clemens Custom Tackle. One end is rounded and polished for burnishing wraps. This end is ground to a blunt, four-sided point, the edges of which can be used to pack thread or move an individual turn. Weâll use both ends of the tool in a few minutes.**



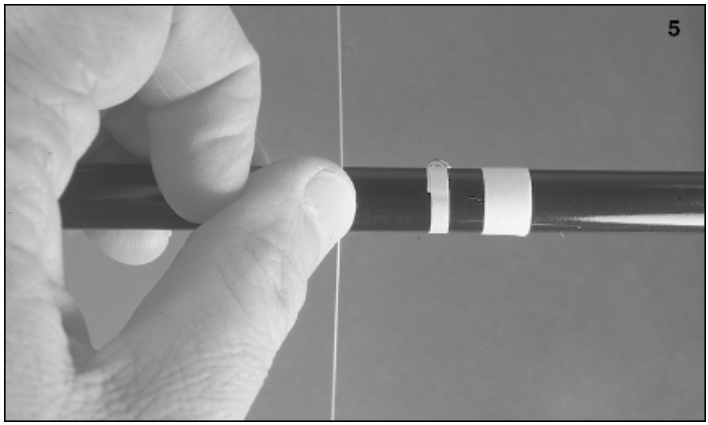

**Tape the guide in its spot, which you have previously marked with a thin sliver of masking tape. Make sure that the guide is aligned with those already on the blank. Make another band of masking tape slightly beyond the end of the exposed foot. This band of tape will serve as a stop against which you will begin the guide wrap.**



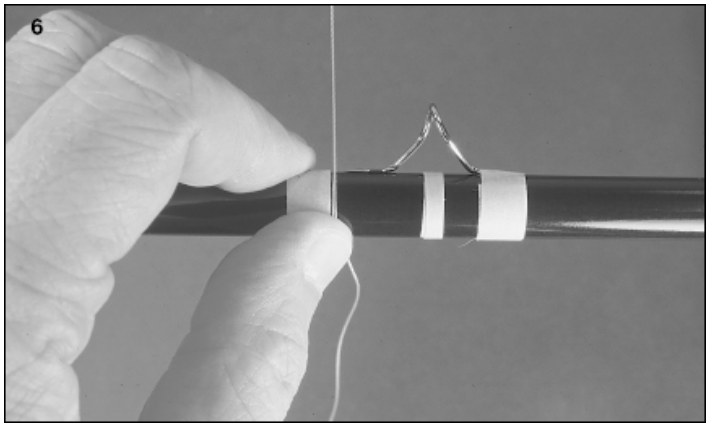

**Turn the blank until the guide is facing away from you. Pull the thread over the blank and wrap it completely around, just as you did to start the practice wrap. This time, though, let the thread lie against the masking-tape stop.**



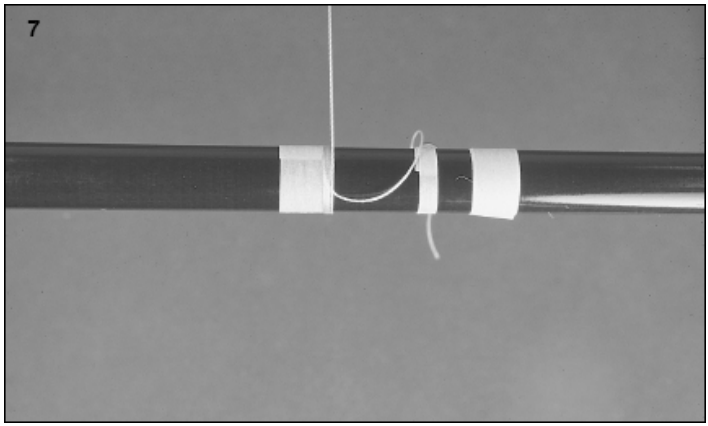

**Push on the working thread to make the crossover.**



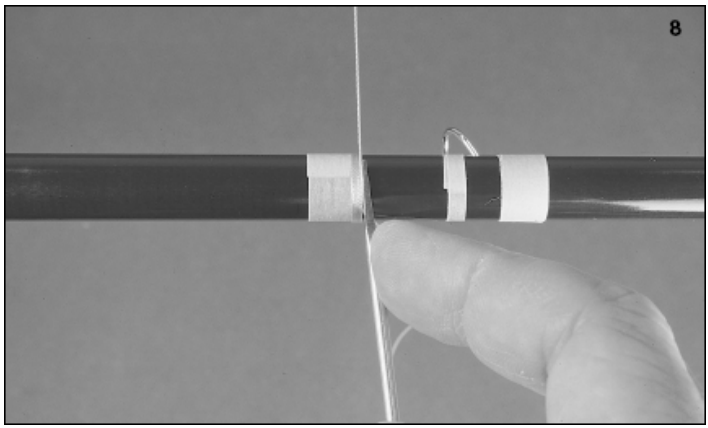

**Pin the crossover against the blank with your thumb.**



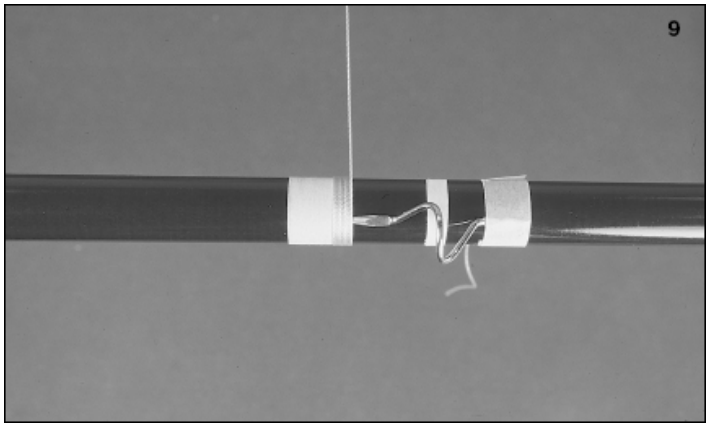

**Rotate the rod toward you, keeping the thread pinned to the blank. After half a turn or so, youâll have to pin the thread to the blank with your index finger so that you can reposition your thumb.**



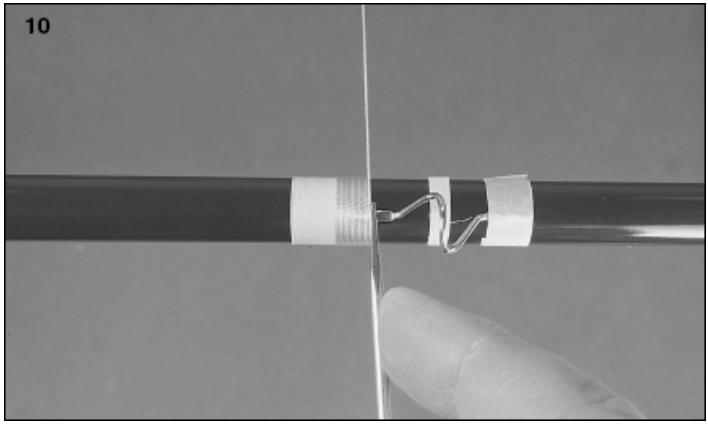

**After a few turns, the jam knot will produce enough friction to stay in place, allowing you to let go of the wrap.**



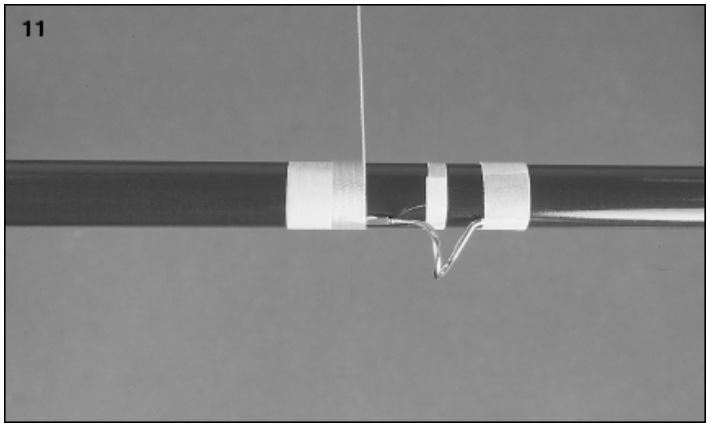

**Give the tag end of the thread a gentle tug to tighten the wrap. Pack the thread against the masking-tape stop with your thumbnail or, as Iâm doing, with a tool.**



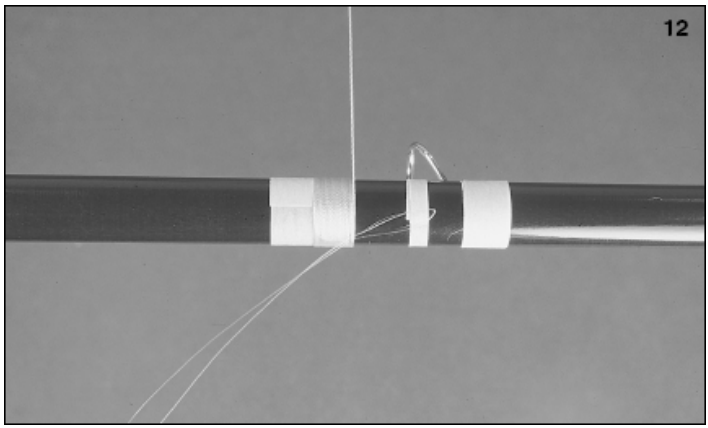

**Resume wrapping. After another two or three turns, cut the tag end of the thread.**



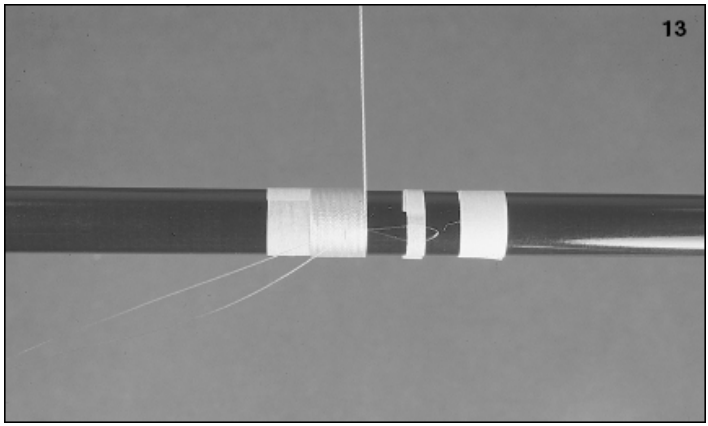

**As you move up the guideâs foot, a shallow dimple will form in the wrap. Eventually, this dimple will cause problems; you might as well get rid of it now. Use a thread-packing tool to push the last turn toward the masking-tape stopâto the left, on this wrap. Gently pack the wrap all the way around the blank.**



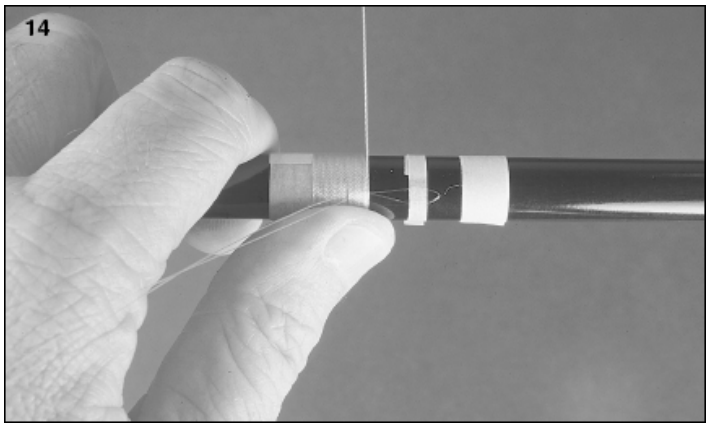

**After packing, the wrap has no tiny gaps, and its edge is perfectly square. Compare this photo to the preceding one, and youâll see what I mean.**



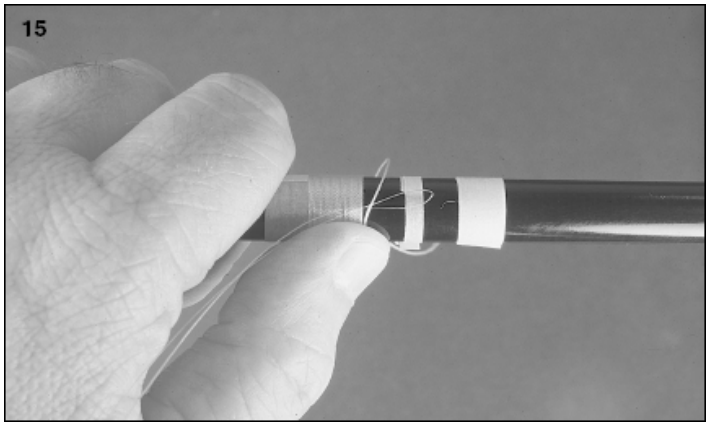

**Resume wrapping. Insert the tie-off loop when you think youâre about 10 turns from the end. Note that the loop goes on the side of the blank opposite the guide.**



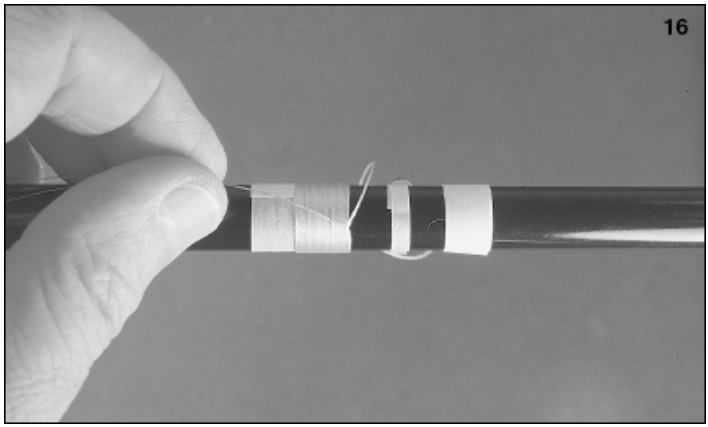

**Stop wrapping when you have covered the flat portion of the guide footâdo *not* wrap up onto the guide as it begins to rise from the blank. Pack the wrap again.**



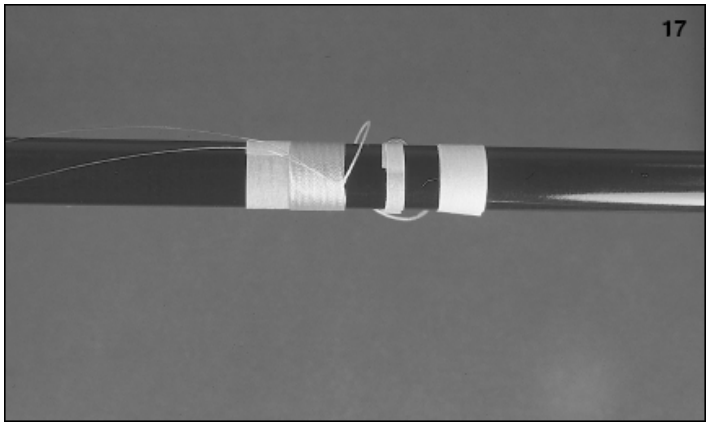

**Pin the end of the wrap against the blank with your thumb.**



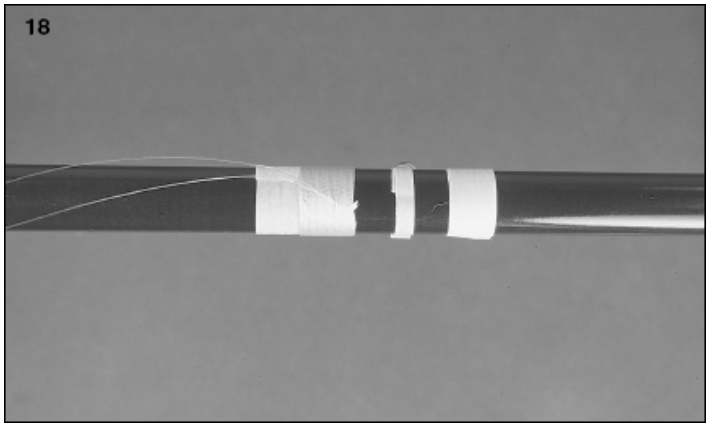

**Cut the thread and push the end through the tie-off loop.**



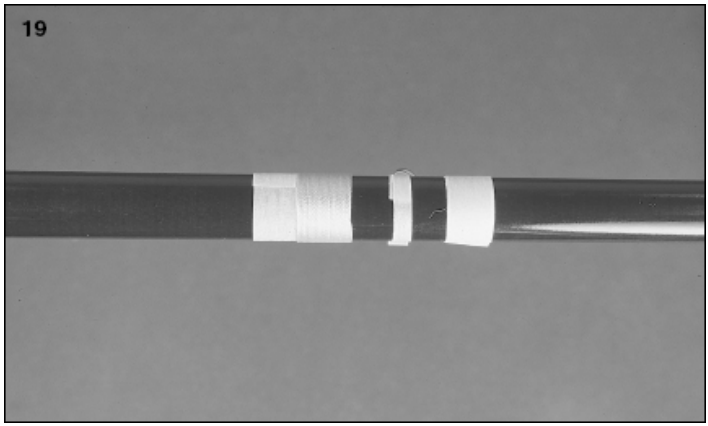

**Weâre going to use the disappearing-end trick. Pull the tie-off loop until the thread just begins to go under the edge of the wrap.**



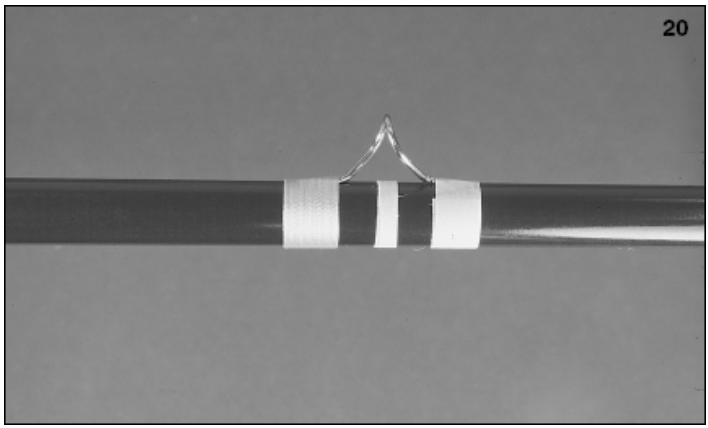

**Make sure that you stop in time. You want the end of the tie-off loop under only one or two turns of thread.**



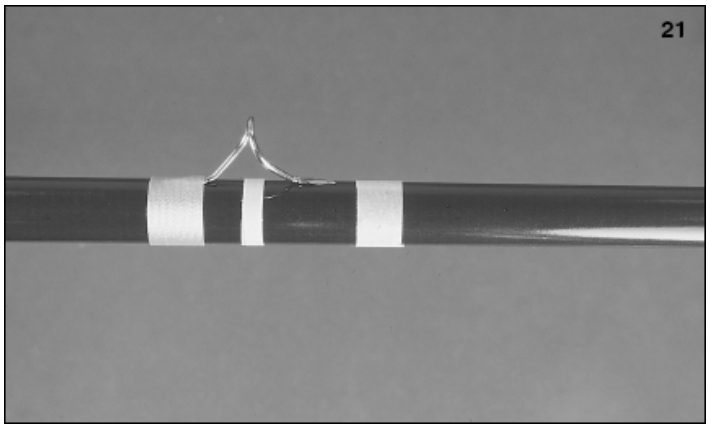

**Clip the tag end of the thread right next to the wrap.**



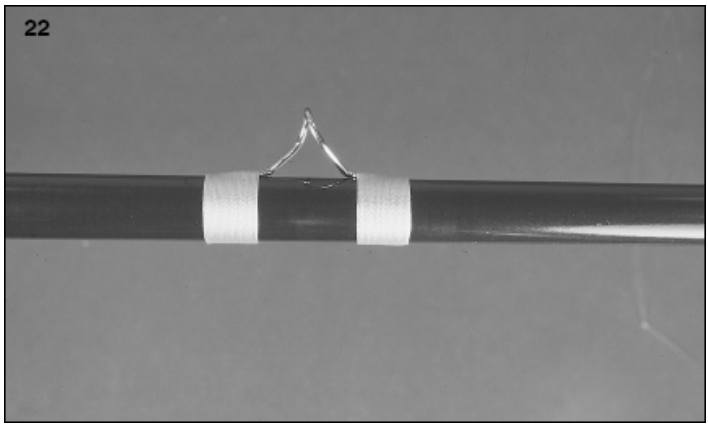

**Give the tie-off loop one last tug. It will come free, with the end of the thread buried beneath the wrap. Thereâs nothing for you to trim and no chance of leaving a tiny stub of thread that will become a blemish in the finish.**



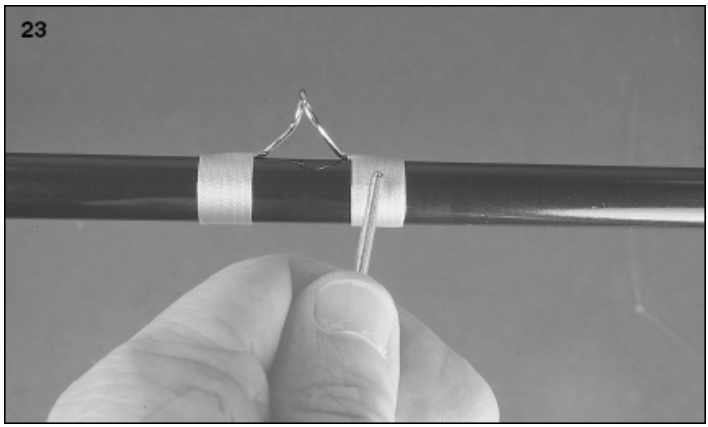

**Remove the masking-tape stop. Check the guideâs alignment; if itâs off a tiny bit, you should be able to nudge the guide into the right spot.**




**With a finely graduated ruler, measure the first wrap. Make a masking-tape stop that will let you duplicate that measurement with the second wrap.**




**Make the second wrap as you did the first. Remove all the masking tape.**




**Use the smooth end of your tool (or a knitting needle) to burnish the wraps. Rub the tool *lightly* back and forth over most of each wrap, avoiding the last couple of turns on each end. Burnishing flattens the thread a little and removes whatever tiny gaps may remain in the wrap.**

**LENGTHS OF WRAPS**

As you move down the blank and use progressively larger guides, make the guide wraps progressively longer. The first guide below the tip-top might need wraps that are each, say, 6 millimeters long. That dimension might work fine for the wraps on the second guide, and maybe even the third. But by the time you get to the fourth or fifth guide, where the blank is considerably wider, 6-millimeter wraps will look too short; they might not even cover the guide feet, since by then you will be wrapping larger guides. Make the wraps a millimeter or two longer, and then another couple of millimeters longer when you move to the next larger guides.

There are no graven-in-stone rules about the exact length of guide wraps. Make the wraps on the first guide as short as you can, and make the wraps progressively longer as you attach larger guides to the progressively fatter blank. Here are average lengths of some of my wraps:

Â

| **Length of Wrap** | **Guide** |
|---|---|
| 5â6mm | Size 1 snake |
| 6â7mm | Size 2 snake |

7â8mm Size 3 snake
8â9mm Size 4 snake
8â9mm Size 5 snake
9â10mm Size 6 snake
10â11mm 10mm stripper
10â12mm 12mm stripper
11â14mm 16mm stripper
12â13mm 20mm stripper

Â

Those are rough averages. You can make your wraps a little longer or shorter. But try not to make them much longer, or you might run into the cracked-finish problem I mentioned earlier. Besides, why add superfluous weight to a rod, particularly on the tip section?

Some rod builders find it easier always to wrap in the same directionâfrom left to right, sayâand therefore flip the blank around to wrap each guide foot. That is, you might wrap the lower foot of a snake guide first, working from left to right. Since you must always start on the blank and wrap up onto the guide foot, you can flip the blank so that you wrap from left to right to secure the upper foot. If that turns out to be the most comfortable method for you, use it.

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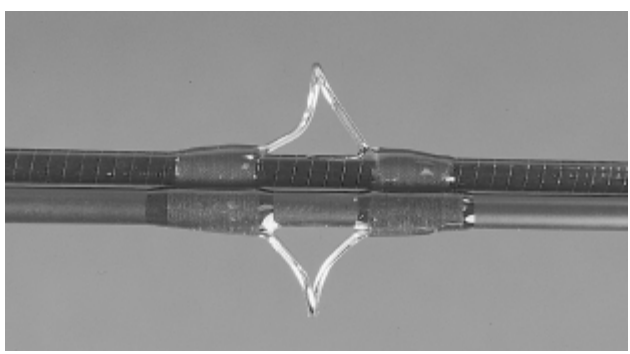


**The shorter your wraps, the less mass and stiffness they and their finish add to the rod blank. Compare these wraps on a factory rod (below) and one of mine (top). This is one occasion when craftsmanship can make a fly rod perform better.**

Other builders, including me, find it equally easy to wrap in either direction. I donât flip the blank as I finish each wrap. I wrap the lower guide foot first, working from left to right, with the butt end of the blank section to my left and the tip to my right. Then I wrap the upper foot, leaving the blank in the same position and working from right to left. Neither wrap seems any more difficult to make, and they all seem to turn out equally well.

**REMOVING FUZZ AND WISPS**

Fuzz on a wrap turns into a blemish or lump when you apply the finishâa tiny blemish, perhaps, but a defect nonetheless. Itâs practically impossible to avoid fuzz. Dust settles on wraps. You might leave a few tiny wisps of nylon when you cut the thread after pulling it under the end of the wrap. Or you might raise tiny wisps as you pack or burnish wraps. Since you canât avoid fuzz, you have to remove it as best you can.

You can lift dust from wraps by using a piece of masking tape as a miniature tack cloth. Lightly touch the tape to the wrap, and immediately lift it off. It will take the dust with it. This may seem an obsessive operation, but trust me: The world is far dustier than it seems. A tiny curlicue of dust invisible to the naked eye can become a very visible blemish as you brush on the wrapping finish.

Wisps of nylon can be removed with a flame. Iâve used candles and even butane cigarette lighters to flame wraps, but the clean, relatively cool flame of an alcohol lamp is best. The larger rod-building supply houses sell alcohol lamps, as do many hobby shops. Rubbing alcohol is an adequate fuel; the 90 percent variety makes a steadier flame than does the 70 percent kind. (Once, when I needed some alcohol immediately and the nearest source was the corner liquor store, I picked up a tiny bottle of high-proof Everclear. It worked fine in my lamp. Heaven only knows what it does to the livers of the poor sots who drink it.)

*Never* hold a wrap over the top of a flame. Youâll almost certainly burn the thread, and you could damage the blank. Rather, slowly bring the wrap near the side of the flame. As

the wrap nears the fire, youâll see the tiny wisps of nylon disappear. When that happens, immediately pull the wrap away from the flame.

**WRAPPING FERRULES**

As noted in chapter 2, you must wrap the female ferrule before you flex a blank. Even if you plan to tape on the guides so that you can test the rod to determine the best guide spacing, you must wrap the ferrule before putting any strain on the blank.

For test-casting, wrap the full insertion length of the female ferrule; if the male part goes in for 2 inches, wrap that much of the female part. Youâll contaminate the wrap as you play with the rod, if only because the line will rub against it. Remove the test-casting wrap when you attach the guides, and make a new wrap at least 1 inch long.

I start a wrap up on the blank and work toward the open end of the ferrule, winding as close to the end as I can. Some rod makers do it the other way, beginning at the open end of the ferrule and wrapping up the blank. As near as I can tell, it doesnât matter how you do it. By wrapping toward the open end of the ferrule, however, and pausing to pack the thread after every 12 or 15 turns, I can make a solid, dense wrap that goes right to the very edge of the blank. If I start at the edge of the ferrule, I have a harder time making a wrap that reaches to the very bottom of the tip section.

Wrap a ferrule with the same thread tension you use for guides. If you increase the thread tension, you might squeeze the ferrule a little, altering its fit.

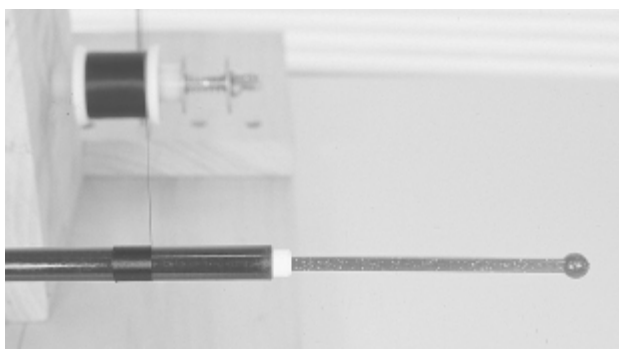
Wrapping a ferrule can be an awkward task, because thereâs no blank (and therefore nothing to hold) on one side of the wrap. You can fabricate a tool that will solve the problem. Find a short rodâa piece of thin dowel, a knitting needle, or even a plastic swizzle stickâand wrap two bands of masking tape on it to make bushings that fit snugly inside the ferrule. When you insert your tool into the ferrule, youâll have an extension handle at the end of blank section. After finishing the ferrule wrap, remove the tool from the ferrule.

**OTHER WRAPS**

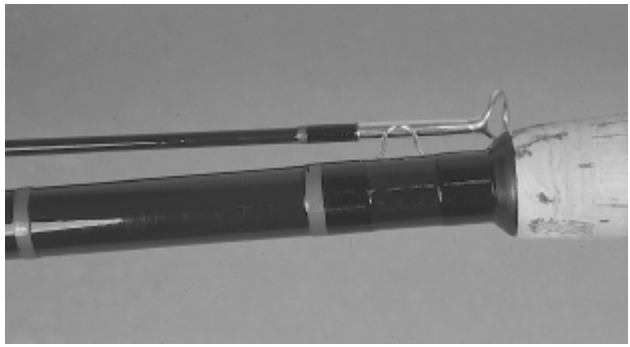
Besides guide and ferrule wraps, you also need to make a wrap

below the tip-top and either a pair of wraps for the hook keeper or, if you donât use a hook keeper, a single wrap right above the grip. The wrap below the tip-top is purely decorative, but a rod looks unfinished without it. Make it slightly longer than the wraps on the first guide.

Itâs tempting, at least to some people, to make long hook-keeper wraps or a long decorative wrap above the grip. Iâve done it myself. Resist the temptation. Somehow, long, solid wraps on the fat end of a fly rod always look cheap and amateurish. Make the hook-keeper wraps no longer than those on the stripping guideâroughly Â½ inch (or about 12 millimeters) long. If you forgo a hook keeper, make the decorative wrap above the handle about as long as the wrap below the tip-top.



**Wrapping a ferrule is easier if you fabricate a temporary handle that fits inside the blank. This handle is a plastic swizzle stick with a band of masking tape on it; I must have been to a party the night before.**



**Besides the guide wraps and ferrule wraps, a rod also gets a decorative wrap below the tip-top and either a decorative wrap or hook-keeper wraps above the handle.**

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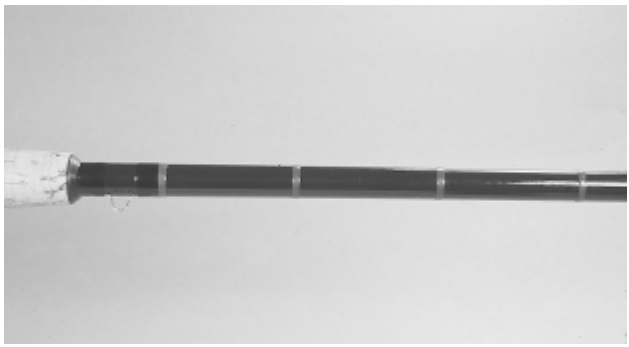
Typically, a rod builder likes to put some sort of inscription on a rodâlength and line weight, his initials or name, and maybe the name of the blank manufacturer. Weâll deal with inscriptions in the last chapter. When I write on a rod blank (and I generally donât anymore), I like to frame the inscription with a very short wrap on each end. And that brings us to our final topic in this chapter.

**TRIM BANDS**

Years ago, most fishing rods had very narrow decorative wraps at the ends of the guide wraps. Trim bands, as such wraps are called, add a jaunty touch and let the builder show off his skill with thread. Nowadays, trim bands have largely gone out of style on factory fly rods, though some cheap fly rods and most spinning and plug-casting sticks sport painted bands at the ends of their wraps. Painted trim bands are irredeemably gauche, and weâll say no more about them. Nicely made trim wraps, however, do give a rod a certain touch of style. I donât like trim bands on all the guide wraps; a fly rod has a lot of guides compared to other types of rods, and decorating every wrap makes the rod too busy-looking for my taste. When I use trim bands, I limit myself to one below the tip-top wrap, another above the top hook-keeper wrap, and one next to each stripping-guide wrap. On a rod with two stripping guides, I

might make trim bands on both; it depends on my mood.



**Trim bands can have a practical use. These, spaced at 2-inch intervals, let me use this rod to measure a fish. The trim band at the top of the hook-keeper wraps is a foot above the bottom end of the rod.**

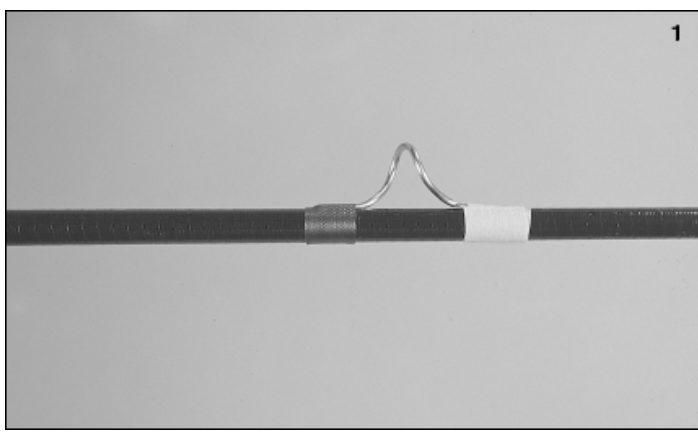
You can also use narrow trim bands to make a ruler of sorts on the butt section of a rod. After I wrapped one of my rods, I measured the distance from the bottom of the reel seat to the end of the upper hook-keeper wrap. It was almost 12 inches. I added a trim band to the hook-keeper wrap, making the distance from the bottom end of the rod to the edge of the trim wrap exactly a foot, give or take $^{1}/_{32}$ inch. Then I made another trim band 2 inches farther up the blank, another one 2 inches beyond that, and, optimistically, yet another 18 inches above the bottom of the reel seat. When I catch a fish worth measuring, I can quickly make a rough measurement with my rod, saving me and the fish a little trouble.

You can make trim bands any color, but I suggest that you try to figure out a harmonious color scheme for the entire rod. If, for instance, you have a dark gray blank and a reel seat with a wood insert, try using dark gray or black guide wraps and dark green or dark red trim wraps below the tip-top, above the hook keeper, and on each side of the stripping guide. On a brown blank, you might use dark brown guide

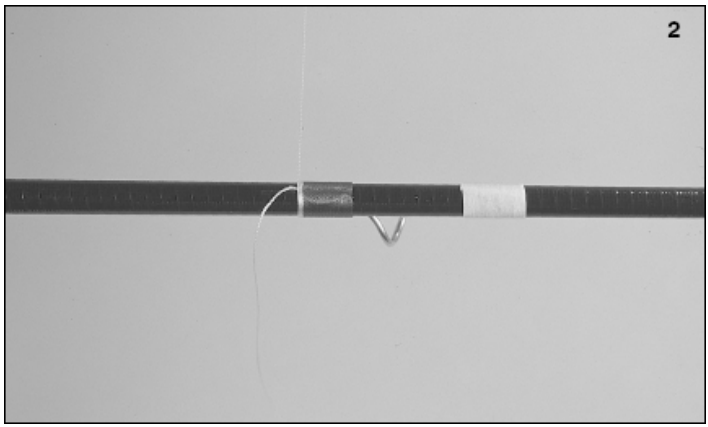
wraps and green trim bands; the green makes a pleasing contrast with the brown. Ruby-red trim bands look fine on almost any rod that has dark wraps. Really bright colors, in my experience, look tacky.

Thereâs nothing wrong with simple wraps, of course. Indeed, a plain rod has a dignified, classic look that many anglers find most pleasing. But tasteful touches of color can add to a rodâs eye appeal, and I recommend that you experiment with trim bands. Iâve even heard about people wrapping rods with their school colors, though such decorations strike me as pretty sophomoric. But I went to a working-class state college; maybe Ivy Leaguers have a different view of things.

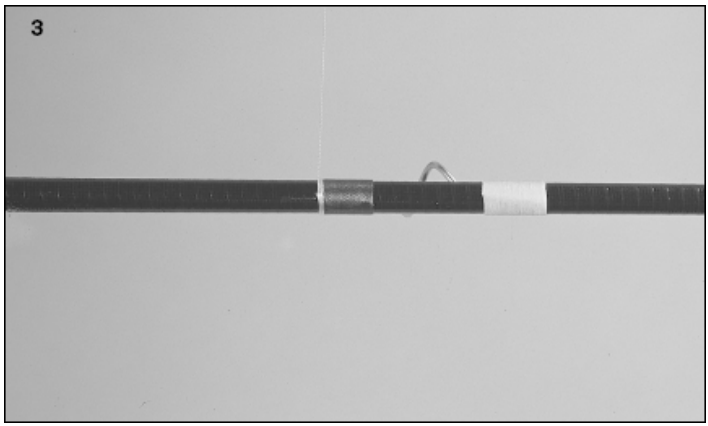
One type of trim band is just a shorter, slightly trickier version of the practice wrap we saw earlier. Letâs make one.



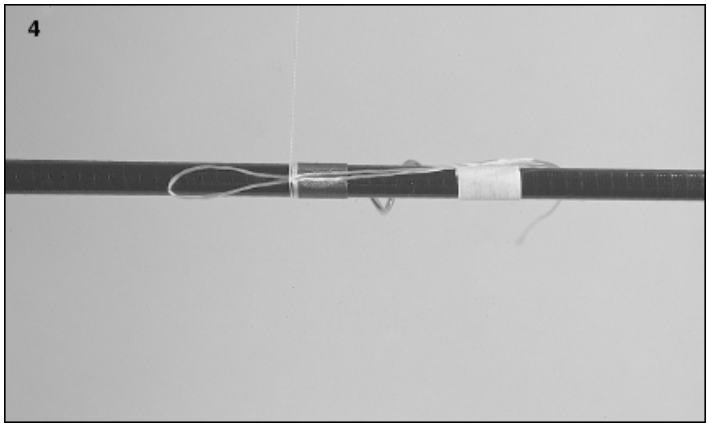

**Make the guide wrap. Pack and burnish the thread. Normally, Iâd make a bunch of guide wraps and then add the trim bands. In this exercise, weâll pretend thatâs what weâve done.**



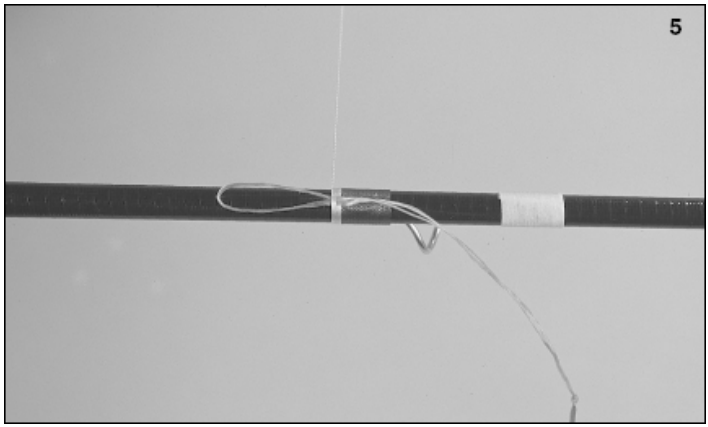

**Switch to the trim-band thread. Reduce the thread tension a little, and start the trim band against the edge of the guide wrap.**



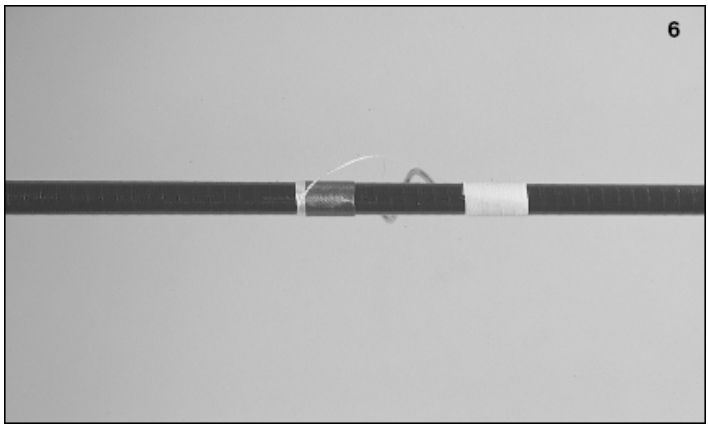

**As soon as the jam knot holdsâafter three turns, sayâcut the tag end of the thread as close as you can. An X-Acto knife works better than scissorsâbut donât dig the blade into the rod.**



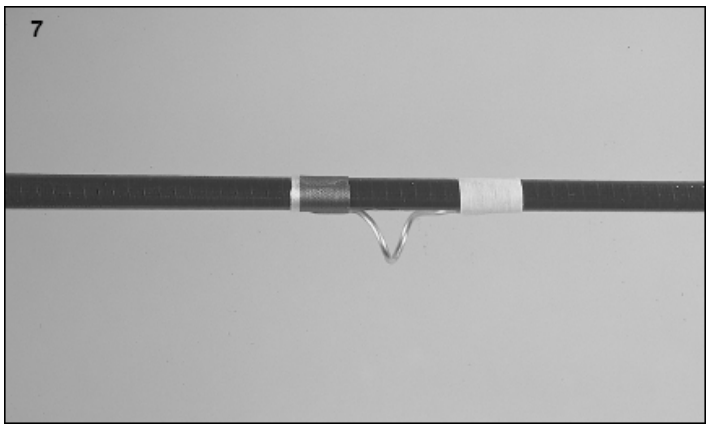

**Slide the tie-off loop under the working thread.**




**Make another two or three turns.**



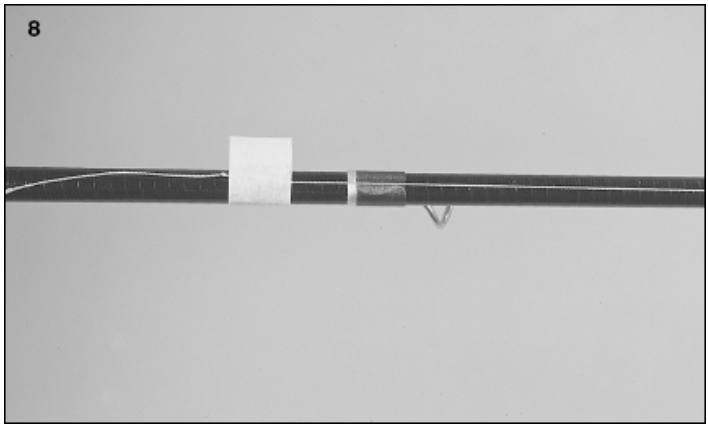

**Cut the end of the thread, poke it through the loop, and pull it through. Before trimming the end of the thread, carefully true up the wrap with your thumbnail. Give the end of the thread a gentle tug to tighten the wrap.**



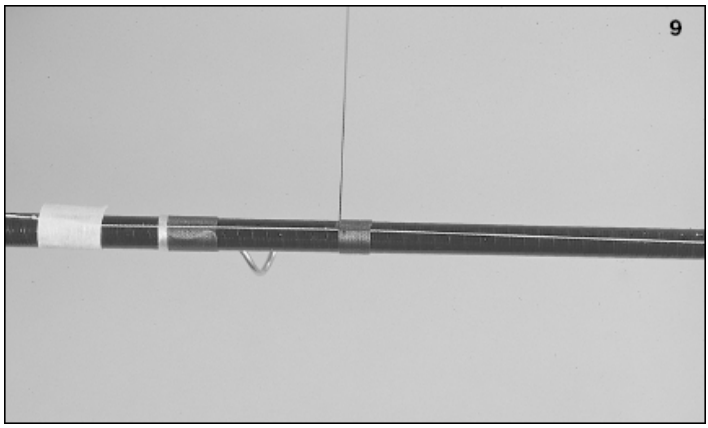

**Cut the excess thread. A trim band is pretty fragile, but thatâs okay: It doesnât have to carry any load. The first coat of color preserver or varnish will seal it.**

**Very narrow trim bandsâjust three or four turns of threadâlook really sharp. Such a narrow wrap, however, requires a different technique, because you donât have room to make a jam knot. The trick is to use the guide wrap itself to secure one end of the trim-band thread. Letâs make this trim band on the other foot of the same guide so you can see the difference between the two**

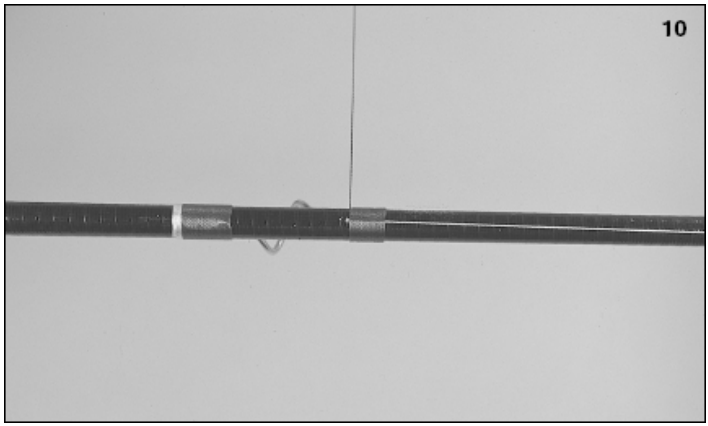
styles.



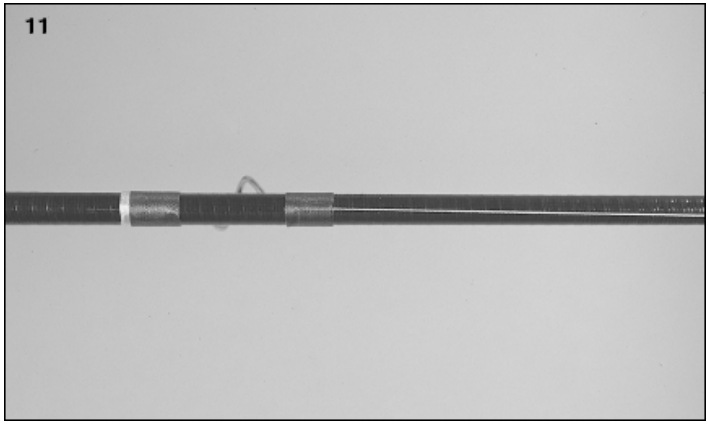

**Cut a piece of the trim thread 12 to 15 inches long. Use a small piece of masking tape to stick one end of the piece an inch or so beyond the far side of the guide. Pull the trim thread along the axis of the blank and tape the other end to the rod.**



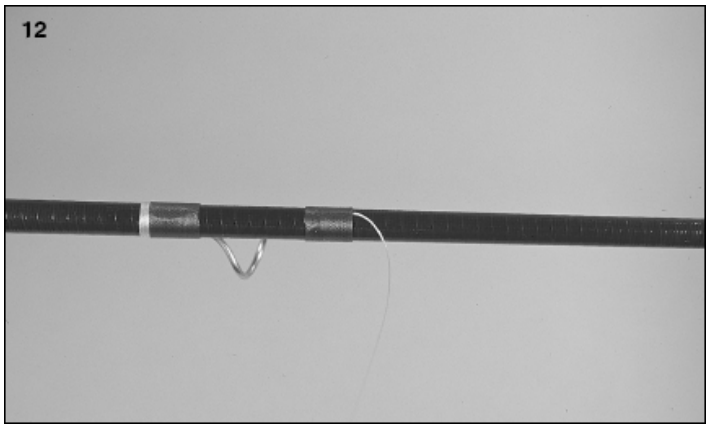

**When you start the guide wrap, you will automatically bind the trim-band thread to the blank.**



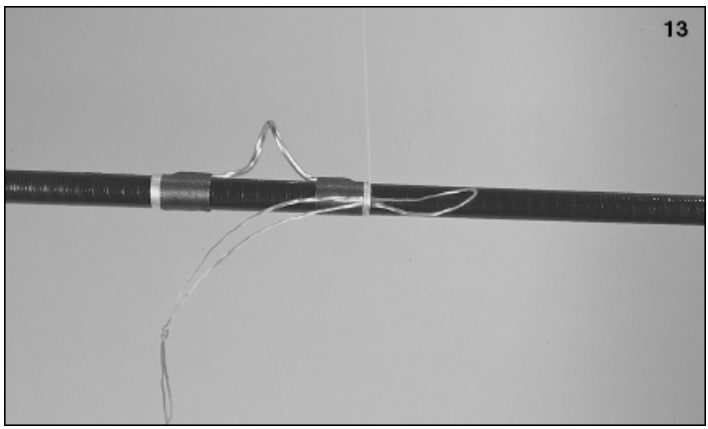

**A couple of turns before you insert the tie-off loop, cut and remove the short end of the trim-band thread.**



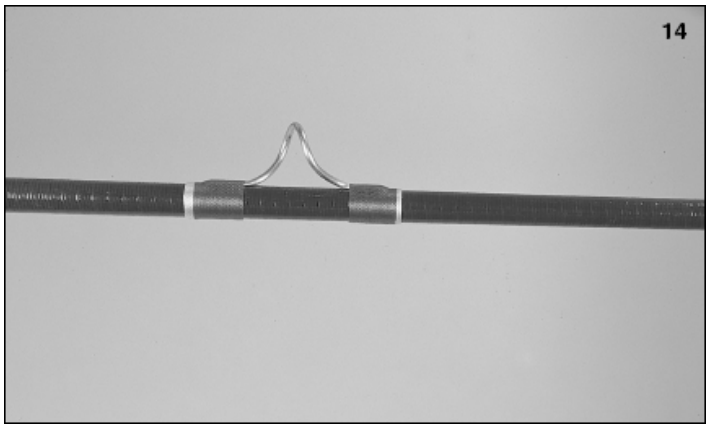

**Finish the guide wrap. Pack and burnish it very carefully. You now have a guide wrap with about a foot of trim-band thread hanging out of one end. You donât have to make a jam knot to begin the trim band.**




**Remove the tape holding the end of the trim thread to the blank. You can hold the trim thread perpendicular to the blank and tautâbut not too tight, or youâll pull it outâand rotate the blank with your other hand. Or you can clip a weight to the trim-band threadâyour angling hemostats, for instanceâand let the weight keep the thread taut.**




**Insert the tie-off loop right away; you want the loop under every turn of the trim band. Make three or four turns of thread, and finish the trim band just as youâd tie off a guide wrap. Before slicing the thread after pulling it under, carefully pack the trim band against the guide wrap and give the tag end of the thread a gentle tug to tighten the wrap.**




**See the difference? The second method produced a very thin, elegant trim band. To my eyes, itâs more attractive than the one on the left. With the first method, however, you get as many chances as you need; you can remove a botched trim band and wrap another. If you screw up a band made with the second method, youâre out of luck: Youâll have cut off the entire guide wrap to start again.**

If you plan to use varnish, remember the darkening effect it has on thread. If you want to have bright trim bands with a varnish finish, make them with NCP (No Color Preserver) thread. If you want subdued trim bands on a dark blank, use bright thread; it will darken a lot when the varnish hits it. With color preserver and a mixed finish, of course, trim bands will turn out pretty much the same color as the naked thread.

In time, you might want to play with other decorative threadwork: inlaid wraps, multi-color wraps, spiral trim bands, and maybe even diamond or chevron wraps on the butt of a rod. Perhaps youâll learn how to make a special type of wrap that lets you write your name with thread. Most fly-rod builders, of course, adhere to the fairly conservative aesthetics of fly fishing; you donât see many spiral or chevron wraps on fly rods. But every now and then I like to flout tradition; maybe you will, too. If youâd like to learn fancy threadwork, youâll find enough examples to keep you busy for years in *Advanced Custom Rod Building* by Dale P. Clemens and in *Custom Rod Thread Art* by the same gentleman.

A beginner, though, should stick to trim bands if he wants to add any adornments at all to his rod. Trim bands are elegant and relatively easy to make.

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**W**raps are perhaps the most obvious evidence of rod-building craftsmanship (good or otherwise). Your friends cannot see the bushings for the reel seat; they cannot tell by looking if you made a good, full-length glue bond between the grip and the blank; many of them might not recognize the superiority of the guides you used. But they can tell at a glance if you did a good job wrapping the guides.

Take your time, and you can do a very good job.

# 6

# FINISHES

Applying finish to the wraps is the last step in building a rod, and for me the most worrisome. You can spend all the time in the world monkeying around with the reel seat and handle until all the parts are perfect, and only then mix the first batch of epoxy. A sloppy guide wrap can be cut off and replaced in a few minutes. With the finish, you have to make your first shot count, because fixing a botched finish is not a pleasant job. And youâre not completely in control of the process; the type of finish dictates the pace.

Still, I enjoy this final step. You will too, once you know what to expect.

## TRANSLUCENT OR OPAQUE?

Depending on its color, standard nylon rod-wrapping thread becomes darker and more or less translucent when you apply finish to it. Itâs possible to pick a thread color that looks swell on the spool and end up with finished wraps that look nothing like the bare thread. This characteristic of nylon doesnât have to be a problem, but it does require a little forethought.

If, for instance, you use tan nylon thread on a dark brown blank and then apply finish, the wraps will darken and become translucent. Youâll see the color of the blank through the wraps, and youâll see the guide feet, too. When you apply finish to bright red thread on a black or dark gray blank, the wraps will turn a color somewhere between a very dark, subdued red and a dark gray with just a hint of red. The guide feet will become visible through the thread, and the color of the wraps might not be perfectly even; they will be redder over guide feet.

You can deal with this in three ways. You can say âSo what?â and apply the finish. If you know what to expect, that can be a good attitude. During the course of writing this book, I built a little 4-weight rod with a fiberglass blank the color of which the manufacturer describes as âflamed caneâ but that my elder daughter more accurately called âcaramel.â I used light tan thread for the wraps and finished them with urethane

spar varnish. The wraps became translucentânearly transparent, actuallyâand the finished effect, with the guide feet plainly visible through the wraps, looks a lot like the threadwork on some glass rods I used as a boy. It was exactly the effect I wanted on an old-fashioned rod.

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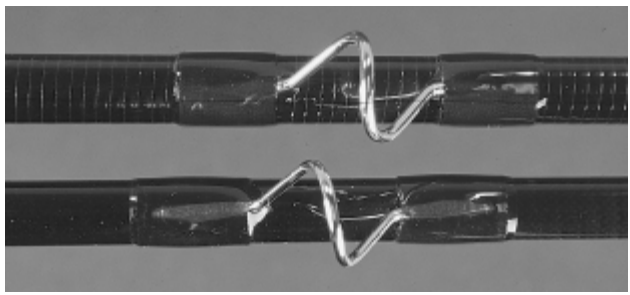

**On the bottom rod, the finish was applied to bare nylon thread, which darkened and became translucent, allowing the guide feet to show. The wraps on top were treated with color preserver before receiving the final finish; they retained their original color and remained opaque. Neither approach is right or wrong; itâs mostly a question of taste.**

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**Modern color preservers are water-based polymers that remain flexible indefinitely.**

Your second choice is to treat the wraps with something called color preserver, a sort of prefinish. Nowadays, most color preservers are water-based liquids that start out opaque white and become clear as they dry. When you apply color preserver to a wrap, the thread darkens at first, then regains its original color as the sealant dries. You can put light tan wraps on a dark brown blank, treat them with color preserver, apply the final finish, and still have light tan wraps. Bright red wraps stay bright red if you give them a couple of coats of color preserver.

Whether to use color preserver is more than an aesthetic choice. The finish you apply to wraps does more than look pretty; it also bonds the thread to the blank. Water-based color preserver sticks to the blank very well, but it doesnât stick as tenaciously as a two-part epoxy finish. The wraps might be slightly less sturdy than if you had applied a plastic finish to the naked thread, though the difference is tiny and, in my opinion, not worth worrying about unless youâre building a 12-weight or heavier rod for huge saltwater fish. When you use color preserver, however, the final finish sits on top of the sealed thread instead of soaking into the wraps. In time, the finish might come unstuck from the sealed thread beneath it; it happens very rarely with modern finishes, but it does happen. A friend with decades of experience in the custom-rod and factory-rod businesses holds that color preserver is never a good thing. On the other hand, many rod builders use the stuff on all the rods they make. I generally use it before applying an epoxy finish, because color preserver provides certain advantages other than preserving color, as weâll see soon.

Your third choice is to use NCP thread. *NCP* means âno color preserver.â As the name suggests, NCP thread retains its color when you apply finish to it. You can wrap bright red NCP thread on a dark gray blank, give it a couple of coats of clear finish, and have bright red wraps. But though NCP thread is slightly thicker than regular nylon of the same nominal diameter, itâs also a little less strong. In all but the lightest colors, NCP thread has a dull look when coated with finish; it lacks the brightness of regular nylon.

And NCP thread seems to contain a lot more air than regular thread. When you apply any finish to a wrap, the liquid soaks in and displaces air within the thread; the air leaves the wrap in the form of tiny bubbles. You donât want bubbles: They look ugly and create weak spots. Although some bubbles will burst of their own volition and others can be brushed out, they are always troublesome. Using NCP thread exacerbates your bubble troubles, while simultaneously producing slightly fatter and less visually appealing wraps. I use the stuff only for decorative touches.

So, which combination of thread and finish should you use? It depends on your tastes and what you expect of your rod. Letâs consider your options.

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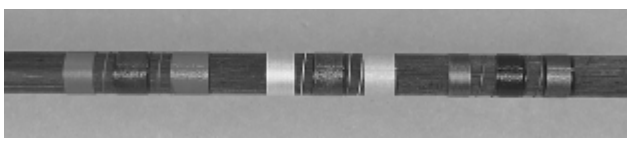

**On each of these sample wraps, the band on the left is naked thread. In the middle of each wrap is a band that has received one coat of finish; the thread became translucent and dark, taking on the color of the black dowel. The band on the right side of each sample was treated with color preserver; it retains the threadâs original color.**

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**ONE-PART FINISHES**

More than 30 years ago, I built my first fly rod from a kit that came with a small bottle of shellac color preserver and another of rod varnish. After reading the instructions, I gave my rodâs sloppy, uneven wraps a couple of coats of color preserver and then slathered on several coats of varnish with one of the paintbrushes I used for model airplanes. I made a crummy job of it, but nearly 20 years later, when I needed to overhaul the rod because the reel seat had broken and the handle had come unstuck, all the guides were still firmly in place.

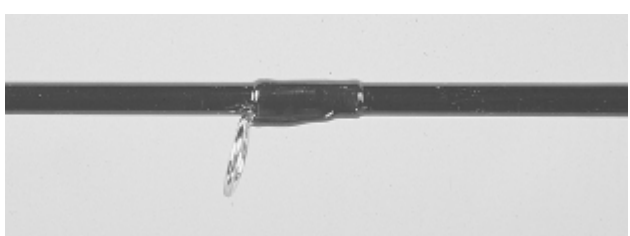
Varnish, to use a generic term for one-part finishes, works fine, even if it has gone out of style. It requires no mixing, levels nicely without your having to rotate the rod for an hour or more, cleans up with solvents available at any hardware emporium, and holds up pretty well. It does require a bit of patience, since you might need to apply as many as six coats, but it doesnât call for special equipment or any great skill.

Nowadays, you can choose from among several one-part finishes. U-40 Perma Gloss, a product of Trondak, Incorporated, is a tough, clear, urethane finish. On bare thread, youâll have to apply at least five coats, allowing about two hours between coats, and then wait a few days before using the rod. If you apply Perma Gloss over U-40âs color preserver, you can probably finish the job with three coats. Once it has fully cured, Perma Gloss provides a sturdy, glossy, flexible, nonyellowing finish on your rodâs guide wraps. Itâs tough enough for a saltwater rod and light enough for the most delicate trout rod. Brushes used to apply Perma Gloss can be cleaned with U-40âs special brush cleaner or with acetone, which will remove nearly anything from any brush. (If you smoke, do not light up in the same room as an open container of acetone; the fumes are explosive.)

**Two-part epoxy finishes are not your only choices. Perma Gloss, a product of U-40, is an excellent urethane finish. Itâs perfectly clear and impervious to UV rays.**

Iâve used Perma Gloss on a couple of rods and like it very much. Since you apply it in thin coats, you donât have to worry (much) about runs and lumps. It wears like iron. The onlyâand very smallâdrawback of Perma Gloss is that it begins curing as soon as you open the bottle. You cannot use the stuff to finish a rod, leave the bottle (no matter how tightly capped) on a shelf for several months, and then use the remainder on another rod; the product will have hardened within the bottle. If you regard each 1-ounce bottle as a short-term investment, Perma Gloss is a first-rate wrapping finish. You can extend the shelf life of an opened bottle by dropping in clean BBs to raise the level of the liquid, thereby reducing the volume of air inside the bottle, and by storing the stuff in a dark place.

I suspect the Gudebrod varnish I used on my first rod was simply spar varnish put up in small bottles. These days, Gudebrod markets a new formula that can be washed out of brushes with soap and water. It has a slight amber tint and requires at least five coats to make a smooth, glossy finish, with at least 12 hours of drying time between coats. After the final coat, it requires at least another several days days to cure completely. Once it has cured all the way, this varnish becomes a flexible finish thatâs adequately durable on light rods. It levels nicely, and, since itâs water soluble when wet, itâs the easiest rod finish to wash out of brushes.



**Perma Gloss makes a good-looking, durable finish on wraps. This is the result of five coats.**

**Helmsman Spar Urethane, a Minwax product, works very well as a wrapping finish. Its only drawback is a pronounced amber cast.**

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An excellent one-part rod finish was brought to my attention by the same bloke who has no use for color preserver. Itâs Minwax Helmsman Spar Urethane, a modern version of spar varnish. Itâs available at hardware stores and is intended for finishing wood exposed to the weather. Wood swells and contracts with changes in humidity and temperature, and this varnish is just flexible enough to allow for such changes. Itâs also flexible enough to withstand the bending of a fly rod, and it makes a very tough finish.

Helmsman Spar Urethane does have a few disadvantages. It has a pronounced amber cast, which means that each successive coat makes the wrap beneath it look slightly darker. You have to buy at least a pint, which is far more than you will use on fly rods before the stuff goes hard in the can. You can extend the shelf life by decanting some of the varnish into two or three small bottles with tight-fitting lids and then resealing the can. Use the varnish in the bottles to finish rods, and tell your spouse that youâre saving the rest for household projects (which, if youâre any kind of angler, you will never get around to).

You need to apply six coats of Minwax Spar Urethane to produce an even, glossy finish on guide wraps, and you canât

rush the job. If you apply the first coat Monday evening, you can brush on the second Tuesday morning. But then you have to wait until Wednesday to apply the third coat, Thurday to apply the fourth, Friday to apply the fifth, and Saturday to put on the final coat. After each coat, you have to clean your brush with mineral spirits, another hardware-store item. After applying the final coat, you should let the finish cure for at least a week before using the rod; in humid weather, you might have to wait two weeks.

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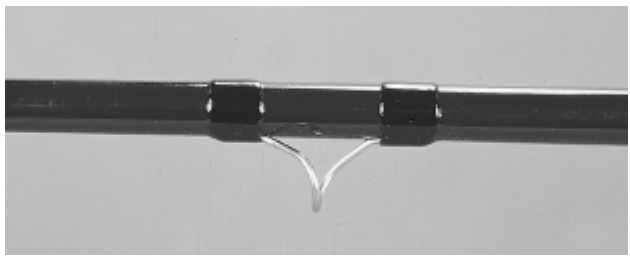

**The wraps on this fiberglass rod received six coats of Helmsman Spar Urethane. Three years and thousands of casts after this photo was taken, theyâre still in good shape.**

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But Minwax Spar Urethane makes a dandy, very durable finish. Brushing on six coats isnât quite the chore it seems. Each coat takes perhaps 15 minutes to applyâthen you clean the brush and get on with your life for another day. If you apply thin coats, you donât have to rotate the rod to make the finish settle evenly; it will level quite nicely all by itself. On a freshwater rod, and even a light saltwater stick, modern urethane spar varnish is a perfectly good finish. Note that weâre talking about spar varnish, and not any of the polyurethanes used for interior floors and wood trim; those will not work on a fishing rod.

**APPLYING ONE-PART FINISHES**

I apply Perma Gloss or spar varnish to standard nylon thread

that has not been treated with color preserver. The wraps darken, taking on most or all of the color of the blank, and become translucent, allowing the guide feet to show. You either like the effect or hate it; I think such wraps look classy. Since this method changes the threadâs appearance so dramatically, I wouldnât suggest using it on thread that contrasts with the color of the blank. Bright green wraps on a brown blank, for instance, will most likely turn a dark, uneven olive when varnished. Red wraps on a dark gray blank will probably become a very dark garnet color, with lighter spots where the thread rises to pass over the guide feet. But brown wraps on a brown blank will become practically invisible; the guides will seem to grow out of the rod, with, as they say about vagrants, no visible means of support. Black wraps will, of course, remain black.

Donât expect bright thread to stay that way if you varnish it. But you can use the effect varnish has on thread to create some nice decorative touches. You can use black wraps on a dark gray rod and then make narrow, bright red trim bands below the tip-top wrap, on each side of each stripping guide, and above the hook keeper. When you varnish the wraps, the bright red trim bands will become the color of a dark ruby or perhaps a garnet, making for a tasteful, subdued adornment.

Varnish or Perma Gloss penetrates thread quickly and thoroughly. Once dry, it does a good job of bonding the wraps to the blank. But if you ever need to replace a guide, you can remove the wraps with an X-Acto knife.

Iâve no idea how well, or even if, varnish would work if it were applied over a water-based color preserver; Iâve never made the experiment. Even if the varnish adhered to the sealed thread, it would still darken the wraps, because the stuff has a pronounced brownish cast. Perma Gloss, which is prefectly clear, can be applied over color preserver.

Use a flat, Â¼-inch artistâs brush. A natural-bristle brush works better than one with synthetic bristles. You find such brushes wherever artistâs supplies are sold. Theyâre not cheap, which means it pays to take care of them. Clean a brush with appropriate solvent, blot it dry, wash it with soap and water, and blot it dry again.

Apply finish sparingly. Load the brush by dipping it into the

finish, then brush out most of the excess against the lip of the container. With the rod section lying horizontally in your wrapping stands, hold the brush against a wrap and turn the rod. Start at the outside edge of each wrap, and work in toward the guide. Apply a thin, even coat from one end of the wrap to the other, rotating the rod as you work. Never try to speed up the job by slathering on thick coats; the results will be hideous. Six thin coats make a very pretty finish; three thick coats produce an uneven mess that cannot be fixed.

As you apply the first coat, the finish will penetrate the thread and displace the air within it. As if by magic, tiny bubbles will appear. Brush them out as soon as they pop up. If, as you progress from guide to guide, you spot a bubble on a wrap you painted a few minutes earlier, do not try to brush it outâyou will smear the finish, which has already begun to dry. Rather, pop the bubble with the tip of a clean pin or needle. The next coat will hide the tiny blemish.

**With any type of finish, youâll get good results by using flat, fairly stiff artistâs brushes.**

Every guide foot has a âtunnelâ on each side where the thread rises off the blank. Most rod builders like to fill those tunnels with finish so that they donât become hiding places for dirt, and to make sure that the finish goes all the way through all the thread. By starting at the outside edge of a wrap and working toward the guide, you allow the finish to soak into the closed end of each tunnel, pushing the air out of the open end.

After the first coat, of course, the thread is sealed, and the finish can no longer seep through the thread and displace the air in the tunnels next to the guide feet. To fill the tunnels completely, or at least nearly so, you might have to use a needle or a piece of fine wire to poke some finish into them as you apply the second and subsequent coats. I donât worry much about filling the tunnels next to the feet of smaller guides on the tip of a rod, but I do try to fill the tunnels on the larger guides.

Different finishes dry at different rates, and the drying time of any finish varies with air temperature and humidity. Donât try to speed things up by placing the rod under heat lamps or blasting it with a hair dryer. All youâll accomplish is to dry the outer skin of the finish quickly, which actually prolongs the curing time for the rest.

Between coats, and for a couple of days after applying the last coat, protect the rod from airborne dust as much as you can. Keep the door and windows of your workshop closed, and keep pets and children away from the area. Donât start another project that raises dust until the finish on your rod has dried. Before applying each coat, inspect the wraps. Loose dust can be removed with a soft, dry artistâs brush.

After applying the final coat, let the rod sit for at least a week before using it. If you can, let it cure for two weeks. Solvents continue to evaporate from a finish for a long time after it seems dry; the longer you let your rod cure, the more sturdy and shiny the finish will be.

**TWO-PART FINISHES**

Two-part finishes do not dry. Although some of them do contain small amounts of evaporative solvent, evaporation plays little part in their curing. They work like epoxy glue: After the two parts have been mixed, a chemical reaction turns a liquid into a solid. A two-part finish is a do-it-yourself plastic, as it were.

*Epoxy finish* has become the generic term for two-part finishes, though not all of them are in fact epoxies. I prefer to think of them as *mixed* or *plastic finishes,* terms that save me from embarrassing myself in front of people who understand chemistry better than I do.

All the major rod companies and most private rod builders use mixed finishes. A well-done plastic finish looks like a sheath of glass over each guide wrap. Good two-part finishes remain flexible indefinitely and resist the yellowing effects of sunlight. As long as you donât expose it to acetone or bug repellents with high concentrations of DEET, a two-part finish will last for decades.

Given those attributes, why would anyone use anything but a two-part finish on guide wraps? Trouble, or at least the potential for trouble, is the main answer. If the mix is off by just a little bit, a plastic finish can take days to cure. Screw up the mix by more than a little, and the goo might never harden. Although youâd think that weather would have little or no effect on the chemical reaction, high humidity can drastically slow down the curing process; a mixed finish applied in a muggy climate might remain sticky for a week.

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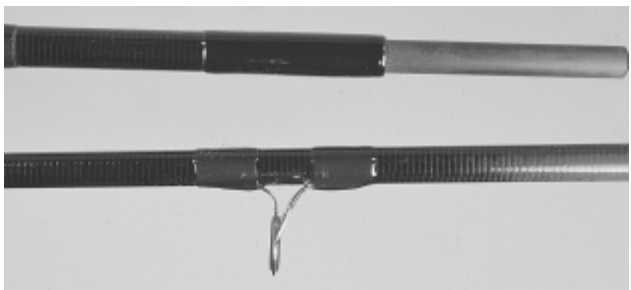

**Although it can be a little troublesome to work with, a two-part finish produces the slickest, glossiest result. Itâs also extremely durable.**

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Because most of them are more viscous than varnish or Perma Gloss, and because they take a relatively long time to cure, two-part finishes can run, sag, and produce lumpy wraps unless you baby-sit the rod for at least an hour or rotate it with a low-speed motorized device. During the six or more hours that they remain sticky, the wraps are dust magnetsâevery particle of airborne dust that touches them gets stuck in the

finish, producing a little blemish.

A lot of amateur rod makers are scared of two-part finishes. I canât blame them. But these finishes produce such excellent results that Iâm willing to take pains to circumvent their possible problems. If you want the toughest, glossiest, most modern finish on your guide wraps, use a two-part finishâbut use it with care.

Your first decision is whether to use color preserver. In most cases, I recommend that you do. As it cures, a two-part finish sticks like, well, epoxy glue. Apply it to naked thread, and the finish will soak through and literally glue the wraps to the blank. That makes for very durable wraps, but it also makes for guides that are very difficult to remove should they become worn or damaged. You can, with an X-Acto knife and a lot of elbow grease, hack plastic-finished wraps off a blank, but itâs not a pleasant or safe job. Color preserver clings to the blank very well, but not so strongly as a two-part finish. If you first seal the wraps with color preserver and then apply a mixed finish, youâll be able to remove the wraps if you someday need to, though theyâll hold up through many years of hard fishing. If you equip a saltwater rod with chromed snake guides or single-foot wire guides, seal the wraps with color preserver before applying a two-part finish. Years later, when the guides have worn, you will be glad that you did.

If you spring for titanium-nitride, silicon-carbide, or similarly long-wearing guides, you wonât have to worry about replacing any of them. In that case, you could apply a two-part finish to the naked wraps and produce a very durable fly rod. Epoxy finish applied to bare thread produces the strongest connection of blank to guide.

But it might not produce the most handsome rod you could have made. Remember that any finish displaces air and produces bubbles as it soaks into a guide wrap. Because theyâre more viscous, some plastic finishes soak into thread much more slowly than does varnish, pushing out the air a little at a time. Bubbles might appear in the finish for quite a while after you apply the goo. Unless you check and recheck all the wraps for about half an hour after applying the finish, popping bubbles as they appear, you might end up with a rod marred by a lot of tiny blemishes. You can use a mixed finish

on naked threadâmost factories doâbut you should reconcile yourself to a painstaking job that requires fiendish concentration. Using color preserver makes the project easier; the thin liquid penetrates the thread quickly, displacing air instantly.

Color preserver can make the finished rod nicer to look at, too. Most two-part finishes are clear, or very nearly so. If you treat the thread with color preserver and then apply a mixed finish, youâll have handsome, glossy wraps with perfectly even color. You wonât have to wonder how the thread will change color, because it wonât. Pick a thread that goes well with the blank, and the effect can be stunning.

Modern color preservers are childishly easy to use. Brush on a generous coat with any small brush, starting at the outside end of each wrap and working in toward the guide. Brush out bubbles as soon as they appear. Apply a bit of extra color preserver along the guide feet; it will soak through the thread and fill the tunnels. Clean the brush with soap and water. The second coat can be applied an hour after the first. Let the second coat dry for least 24 hours before applying the final, two-part finish. Youâll like the results.

**VARIETIES OF TWO-PART FINISHES**

Most rod-building catalogs carry several varieties of two-part finishes. Some are nearly as thin as spar varnish; others are nearly as viscous as 30-minute epoxy glue. Avoid the thickest varieties. A heavy finish adds weight and stiffness to a fly rod but doesnât make the wraps any more durable.

Unfortunately, descriptions in catalogs and labels on bottles can be less than explicit. You might run across several two-part finishes touted as high-build, one-coat, super-tough coatings. Those are all good marketing terms, but they donât tell you which finish is thickest and which is thinnest. Eliminate any described as suitable for heavy-duty boat rods or decorative wraps on the butts of surf rods. When in doubt, ask about a two-part finish before you buy it.

Iâve had excellent results with the Crystal Coat finish sold by Clemens Custom Tackle. Itâs barely thicker than varnish and easy to apply in two thin coats. Crystal Coat cures slowly, but, since it can be applied in a very thin layer, it doesnât

want to sag as much as some other, thicker two-part finishes. It has a relatively long working timeâàpot life,â in the slang of the craftâwhich means that you can coat all the wraps of a 9-foot rod with one batch. Two coats applied less than 24 hours apart will do a lovely job.

Flex Coat, probably the most popular brand of plastic finish, offers high-build and âLiteâ formulas. The original, high-build finish is actually more like a medium-build product, and works well on middleweight and heavy fly rods. A skillful craftsman can get away with applying a single coat. But I prefer the Lite version. Itâs very easy to use, and its viscosity easily lets you control the thickness of the finish. On a very light trout rod, you can give the wraps a coat of color preserver, let them dry overnight, and then finish them with one layer of Flex Coat Lite. On middleweight and heavier rods, use two thin coats, allowing the first to cure for at least eight hours before applying the second. The 2-ounce kit, enough for several rods, comes with graduated syringes for measuring.

Dura Gloss LS from U-40 is a good finish that cures a bit more rapidly than some other two-part coatings. It comes with graduated syringes for measuring each part. For about half an hour after you mix it, Dura Gloss is thin enough that you can apply a light coat. It levels nicely and doesnât require as much baby-sitting as some other finishes. I get the best results with two thin coats applied no more than 24 hours apart. The stuff becomes tack-free quickly enough that you can apply a second coat about six hours after the first.

In general, youâre better off applying two light coats of mixed finish than trying to rush the job with one thick coat. Youâll have fewer problems with runs and sags, and the second coat can cover (at least partially) any imperfections in the first coat.

Some two-part finishesâCrystal Coat is oneâemit powerful fumes. Since you cannot apply rod finish in a room with open windows, you have no choice but to endure the fumes. If you can; some people simply canât stand chemical fumes. Flex Coat and Dura Gloss LS give off fewer vapors; at least thatâs what my nose tells me.

**MIXING TWO-PART FINISHES**

A number of anglers have told me about having horrible problems with two-part finishes that remained tacky for days or simply failed to cure. Most such tragedies are caused by improper mixing.

You must combine *exactly* even amounts of both parts. Then you must mix the two parts very thoroughly in the right type of container and with the right implement. Most finishes can absorb contaminants from paper, plastic, and wood, and those contaminants can keep the stuff from curing properly. For a few bucks, you can pick up two sets of stainless-steel measuring spoons at the nearest department store. Use the 1-tablespoon size as mixing pots. If you donât have graduated syringes, you can use the Â¼-tablespoon size for measuring the finish. With a permanent marker, write *A* on the handles of the smallest spoons in one set, and *B* on the handles of the small spoons of the other set. Use the A spoons for part A, and the B spoons for part B.

Some finishes come in syringes or plastic bottles with tapered nozzles. You can dispense each part from its original container, but Iâm still inclined to use my little measuring spoons. Itâs too easy to dispense too much of one part, then try to add a little of the other part to compensate, and end up with an uneven mix. By carefully filling my smallest measuring spoons and then emptying them into a large spoon, I know Iâm getting an even mix.

With a thin finish such as Crystal Coat, you can employ plastic coffee stirrers or drinking strawsâone for part A and one for part Bâas pipettes to lift the liquid from the bottles and deposit it in your Â¼-tablespoon measuring spoons. When youâre done, discard the coffee stirrers.

Itâs best, though, to use graduated syringes made for measuring epoxies. Most supply houses sell U-40âs or Flex Coatâs syringes, and both U-40 and Flex Coat make finishing kits that come with them. These tools take the guesswork out of mixing a finish. You draw exactly the same volume of each part into the syringesâresin in one, hardener in the otherâand then squirt the goo into the mixing vessel. These syringes are reusable, provided you store each one in its own plastic bag. Do not try to clean them after using them; any residue left in a syringe will not harden, because it has not been mixed with

the other part.

A large paper clip makes a good scraper and stirrer. Straighten the widest bend so you have an oval with a long handle. Prepare several paper clips this way. If you use small measuring spoons, pour part A of the finish from the spoon into the mixing vessel, and then use a paper clip to scrape all the liquid out of the measuring spoon. Discard the paper clip. Pour part B from its measuring spoon into the mixing vessel, and use another paper clip to scrape that measuring spoon. Pitch the part-B paper clip. If you use syringes, of course, you will simply squirt each part into the mixing vessel.

**The best way to measure the parts of a mixed finish is with graduated syringes. Some finishing kits come with syringes; most supply houses also sell them separately.**

**Stainless-steel measuring spoons make good mixing vessels for two-part finishes. Use a large, clean paper clip to stir the mixture. If you donât have syringes, you can use the smallest spoons in each set to measure the two parts of the finish.**

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Use a similarly bent paper clip to mix the finish. Stir it gently, but for a long time. A painfully long timeâI usually stir the stuff for three to five minutes, which seems like an eternity when youâre manipulating a paper clip inside a tablespoon. But a thorough mix ensures that the finish will cure properly.

Some finishes (Crystal Coat is one) need to sit for a while after theyâre mixed to give the reaction time to start; the instructions on the bottles will tell you how long. Any finish benefits from sitting for a few minutes after you mix it; the ârest periodâ allows any bubbles you stirred into the goo to rise to the surface and break. Cover the mixing vessel with a piece of aluminum foil to keep dust out of it.

While the finish sits, donât just sit there yourself. Clean your measuring spoons. Wipe each spoon with a paper towel, wipe it again with a paper towel soaked with acetone, and then one more time with a dry paper towel.

Another way to get rid of most bubbles is to pour some of the finish onto a clean, flat surface such as a piece of aluminum foil. As the puddle of finish spreads out on the foil, most of the bubbles will pop. U-40 recommends this procedure for Dura Gloss LS.

### APPLYING A TWO-PART FINISH

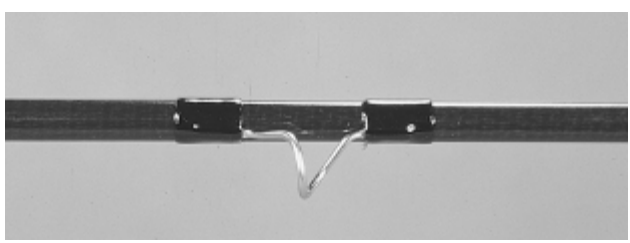
Flex Coat seems to be the only two-part finish that you can apply with a disposable nylon brush. With all other plastic finishes, use a natural-bristle brush. Even with Flex Coat, I recommend using a good natural brush, since it will make for a neater job than a cheap throwaway brush will.

Apply finish with a flat, fairly stiff, Â¼-inch artistâs brush. Most rod-building catalogs offer such brushes. Youâll also find them wherever art supplies are sold and in many department stores. Buy several. If you drop a brush onto the floor while

youâre finishing a rod, set it aside and grab another one. The brush that hit the floor picked up dust, only some of which you will remove by wiping it. Better to reach for a clean tool. You can clean the dirty brush later.

Lay the rod section in your wrapping stands, making sure that none of the wraps is touching either stand. When you finish a butt section, put the reel seat or grip in one stand, and position the other stand so that it supports the section above the stripping guide. With a tip section, arrange your stands so that one is near the bottom end of the section, between two guides, and the other is between the second and third guides or the third and fourth.

Dip the tip of the brush into the finish to load it, and wipe off most of the excess. Apply the finish sparingly, spreading it out to a thin layer while rotating the rod with the brush held against the wrap. Start at the outer edge of each wrap and work toward the guide. As you rotate the rod to apply finish to each wrap, try not to slide it from side to side in the wrapping stands; you donât want a wrap thatâs already covered with gooey epoxy to come into contact with a stand, because youâll end up with epoxy finish smeared all over the blank. That accident is most likely to happen on the tip section, where the guides are closer together.



**A two-part finish doesnât have to result in a high buildup. These wraps were finished with two thin coats of Crystal Coat from Clemens Custom Tackle. After three years, countless casts, and more than a few hard knocks, these wraps still look good.**

Many experts extend the finish a millimeter or so onto the blank beyond the end of each guide wrap. That makes for a graceful effect: The wrap seems to grow out of the blank rather than starting abruptly. It has nothing to do with making the wraps more durable; if a finish is going to crack, it will always do so at the end of the guide foot, not at the end of the wrap.

Brush out bubbles as you spot them, and try to apply the finish as evenly as possible. You have a lot of working time with a two-part finishâmuch more than you have with varnish. If you notice a bubble or bare spot on a wrap you coated five minutes ago, you can safely fix the problem, because the finish cures rather than dries. Take your time on each wrap, making sure that you neither miss any spots nor leave big blobs of finish anywhere.

A mixed finish begins to cure as soon as you mix it. As you work with the stuff, you will notice that it becomes thicker and thicker. The thicker the goo becomes, the harder it is to apply in a thin coat, though it will still level well enough. Donât push your luck. Before a batch of finish has assumed the consistency of molasses, Iâve discarded it and mixed another batch. More often than not, Iâll use two batches to finish a rod. Professionals abhor such waste, but Iâm happy to waste half a dollarâs worth of epoxy to make the job a little easier.

If you treated the wraps with color preserver, you might be able to get away with one coat of finish. But if you donât have a motorized rod turner, you will have less trouble with two thin coats than with one heavier coat.

Apply the second coat no more than 24 hours after the first. Waiting too long gives the first coat a chance to cure completely, and the second coat might not stick as well as it would have if you had applied it within 24 hours.

**PREVENTING RUNS AND SAGS**

Varnish begins to form a skin shortly after it is applied, and, provided you applied a thin coat, that skin keeps the varnish from sagging to the bottom side of each wrap. But a two-part finish hardens by chemical reaction and takes hours to do it. The finish has plenty of time to run, sag, and produce ugly wraps.

The less finish you apply, the less there is to run and sag.

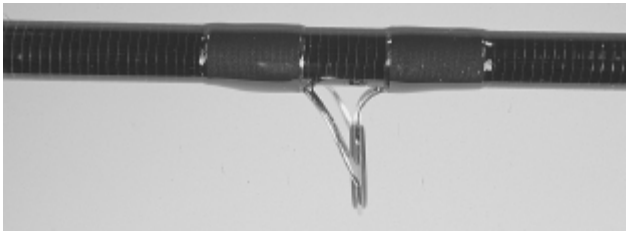
You need only enough finish on a wrap to level the grooves between the individual turns of thread. More than that adds weight and stiffness, but not durability.

Even if you apply a thin coat, however, you will still need to rotate the rod for a while. If you develop a passion for rod building, you can save yourself a lot of time and grief by investing in a motorized rod turner, a low-rpm motor with a chuck that holds the end of the rod section and, ever so slowly, turns it on your wrapping stands. Most rod-building supply houses sell such equipment. Prices range from around $50 up to several hundred bucks for a fancy setup. Flex Coat has a nifty, inexpensive tool that uses a 6-volt lantern battery to power a low-speed motor.

But a first-time rod maker doesnât know if heâll fall in love with the craft, and someone who builds one or two fly rods a year might have trouble justifying the expense of a motorized turner. Fortunately, you can do a lovely job without a motor-driven setup. After coating all the wraps on one section of the rod, place it in your wrapping stands with the guides facing up. After 5 to 10 minutes, give the section a half turn so that the guides point down. Give it another half turn after another 10 minutes have passed. While youâre waiting to turn the rod, clean your brushes and the mixing vessel. Read a magazine, do some paperwork, or watch TV. I used to catch up on my proofreading while baby-sitting a rod. If you plan things properly, finishing a rod is a great excuse to avoid doing household chores or answering the phone.

For the first half hour after applying the finish, you can see it sag as the rod sits, particularly if you brushed on a thicker coat than you should have. Then, gradually, the goo begins to stiffen. You can lengthen the interval between half turns to 15 minutes, then 20. When I use Dura Gloss LS, I can walk away from the rod after about an hour. As long as I have something to occupy my mind, the time doesnât drag.

Donât let any of this fill you with dread. If you measure and mix the finish properly, the absolute worst that youâll have to endure is baby-sitting a rod for maybe an hour and a half. Read a book, tie up some leaders to use with your new rod, or balance your checkbook.



**If you have a little patience, you donât need a motorized rod turner to use a two-part finish. These wraps have two coats of U-40âs Dura Gloss LS Supreme applied about five hours apart. I didnât use a motorized turner.**

**CURING TIMES AND THE HAZARDS OF DUST**

Different brands of two-part finishes cure at different rates, but all of them take a long time to harden completely. Temperature has a lot to do with how quickly a finish cures. Indeed, raising the temperature in your workroom to 80 degrees or more can cut an hour off the time that you have to rotate the rod. I do most of my rod building during the cold months. When I finish a rod, Iâll try to get the room up to at least 80 degrees. That way, I can stop rotating the rod and get on with life after about an hour, at which time I also turn down the heat to 72 or so.

When youâre baby-sitting a rod while the finish cures, turning the stick by hand every 15 to 20 minutes, youâd like to know when itâs safe to quit. You donât want to guess that the finish has cured sufficiently for you to walk away. Nor do you want to keep touching the wraps to check the finish; inevitably, youâll leave a blemish on one of them.

So what do you do? Make a sacrificial sample of finish. After painting the wraps with the goo, brush a thin coat of the finish on a piece of aluminum foil, the barrel of a used-up ballpoint pen, or whatever. As the finish on your rod cures, the sacrificial sample will cure at about the same rate. Poke it with a pin or toothpick to check its stiffness. When the sample has achieved a rubbery consistency, you can stop turning your rod.

But you still need to protect it from dust. For 4 to 12 hours

after it becomes fairly stiff, a two-part finish remains tacky. During that time, your rodâs wraps are magnets for dust that can make a carefully applied finish look like a dirty rug.

Try hard to apply the finish in a room that has as little airborne dust as possible. Do not build rods in your fly-tying room. Avoid high-traffic areas in your home. Ban children and pets from your rod-building area. Plan your time so that you can thoroughly vacuum your workroom the day before you apply finishâvacuum the floor, the walls, your workbench, and any other furniture in the room. If you have an electrostatic air cleaner, let it run for a day or two before you finish a rod. Never smoke in your rod-building area.

Even your clothing can make a difference. Flannel and chamois-cloth shirts shed a lot of tiny fibers; corduroy trousers can pick up (and release) a lot of dust. Honest. Before finishing a rod, don clean khaki or twill trousers and a short-sleeved shirt.

After applying the finish to a rod, forbid anyone else to enter your workroom for at least 10 hours. If you canât do that at home, find someplace else to finish your rods. I used to finish rods on weekends in the conference room of the offices where I worked. By the time office traffic resumed on Monday morning, my rods were no longer tacky.

Humidity affects the curing time of a two-part finish. In damp or humid weather, rod wraps can remain slightly tacky for several days. In a really soggy climate, a two-part finish may never cure properly. Air-conditioning reduces humidity, but it might introduce a certain amount of dust; and besides, the cooler the room, the longer the finish will take to cure. In a perpetually humid place, try to arrange things so that your workroom will have a temperature of, say, 75 degrees and as little humidity as possible. If high humidity is an occasional problem, watch the forecast so that you can apply finish during a dry spell.

**CLEANUP**

Rod-building supply houses sell special cleaners for brushes used with two-part finishes. Buy the cleaner when you get the finish, and donât be stingy with the stuff. After cleaning your brushes with the appropriate solvent, wash them with soap

and warm water.

Wipe the excess finish from the mixing vessel with paper towels. Use a paper towel soaked with acetone to clean the last of the residue from the mixing pot. Store your brushes and your measuring and mixing spoons in plastic bags between rod-building projects.

**A FEW THOUGHTS ON THREAD COLOR**

The next time youâre in a tackle shop, mosey over to the rod racks and study the high-ticket fly rods. Although the colors of the blanks and wraps may vary, all of the good rods will have subdued, conservative color schemes. You will not, for instance, see an expensive dark gray fly rod with blazing red wraps, or a deep brown blank with neon-green threadwork. Traditionally, fly rods have an understated, subtle class.

Thereâs a reason for that, and itâs not because fly fishers are innately cultured individuals blessed with impeccable taste. One look at how many of us dress puts that argument to flight.

A fly rod has a lot of guides, and therefore a lot of wraps. A 9-foot rod probably has 24 wrapsâ20 for the guides, one below the tip-top, one on the female ferrule, and two for the hook keeper. A typical spinning rod probably has half that many, or fewer. And so itâs very easy, by using thread that clashes with a blank, to make a fly rod that looks like a bad piece of 1960s pop art or a barber pole painted by a psychotic. Thread that looks dashing on the first guide can seem downright garish by the time youâve made two dozen wraps with it.

Pick thread colors carefully. When in doubt, lean toward a conservative color scheme. On a black or dark gray blank you canât go wrong with black thread. Dark brown or very dark green thread looks handsome on a brown blank; a deep, ruby red also works well on a brown blank and on a dark gray stick. On a dark green blank, go with the deepest green you can find, or with black. If you bought a blue blank, try dark blue or black thread.

Consider, too, the overall color scheme of your rod. Letâs say youâre going to put a graphite reel seat with silver hoods on a dark gray blank and give the rod chrome-plated snake guides and strippers. And, of course, youâll give the rod a cork

handle. Thatâs a pretty simple color scheme: dark gray, silver, and cork. On that rod, Iâd be tempted to use dark ruby-red wraps; theyâd add a hint (but a dignified hint) of color.

Maybe you have a deep green blank, a skeleton reel seat with black hardware and a walnut insert, and chromed guides. All by themselves, the blank and wood insert have considerable eye appealâyou donât need to tart up this rod. Inconspicuous, dark green wraps wonât fight with any of the other parts. Nor will black wraps; black threadwork, it seems to me, would reiterate the black hardware on the reel seat and set off the chromed guides.

If I bought a dark brown blank I wanted to fit with a skeleton reel seat, Iâd probably buy a seat with a walnut insert and brightly polished hardware. Then Iâd select chromed guides, a polished winding check, and a spool of dark brown thread. The finished rod would have a simple but interesting color scheme comprising bright silver and various shades of brown (the insert, blank, and wraps), with the cork serving as a visual accent.

Those are just a few suggestions. The point is to consider the colors of all the componentsâblank, reel seat, guides, hook keeper, winding check, handle, fighting butt, and wrapsâand try to find a harmonious arrangement. If you want to add colorful touches to your rod, you can do so with carefully placed, narrow trim bands.

# 7

# ODDS AND ENDS

Weâre done with the hard work. You can skip the rest of this book and still build excellent rods that will give you many years of enjoyment. But since youâve made it this far, you might as well see the thing through to the end.

Weâve dealt with rods in bits and pieces, tackling one type of component at a time. I donât know another way to write about rod buildingâin detail, anywayâbut maybe we should run through the entire process, just so the order of events is clear. Then we can look at a few final details.

## START TO FINISH

1. Select the blank. As you study catalogs, consider your needs, preferences, and budget. Do not for a moment fear that your work and craftsmanship will be wasted if you lavish them on an economical blank. Choose carefully and ask as many questions as you need to.
2. Pick out the rest of the components: reel seat, handle, guides, thread, and finish, and, if you want them, winding check, hook keeper, and fighting butt. Make sure that your reel seat and grip will work together. Get the right sizes and number of guides, and order a few spares. Decide whether you want a one-part or a two-part finish. Donât forget paste epoxy for the reel seat and grip.
3. Figure out which tools and equipment you need to buy or make. If you have the usual assortment of hand tools and scrap lumber most of us accumulate, you can easily fabricate rod-wrapping stands and a thread-tension device. Rat-tail files for fitting handles, fine files for shaping guide feet, and several grades of sandpaper can be found at the nearest hardware store. While youâre there, pick up a couple of rolls of masking tape. The art-supply or hobby shop will provide flat artistâs brushes and a package of fresh blades for your X-Acto knife. A

thread burnisher can come from the household knitting basket or from a rod-building catalog.

4. When your goodies arrive, inspect the blank. Check the fit of the ferrule (but donât put any strain on an unwrapped ferrule) and make sure the blank is straight, or at least reasonably so. Wrap a piece of masking tape at the middle of each section of the blank, and find and mark the spine of each section.
5. If your blank has a slick, glossy finish, use coarse sandpaper to *lightly* score the bottom end of the butt section, where the reel seat and handle will go. Clean the blank with rubbing alcohol. Fit the reel seat and grip to the blank. Glue nothing until you are certain that *all* the parts fit perfectly. Mix up some epoxy and mount the reel seat, making sure that the fixed hood is aligned with the spine of the blank. After the glue cures, mix another batch and attach the handle to the blank. If you bought a winding check, glue it in place.
6. Glue the tip-top to the blank, aligning it with the spine of the tip section. Grind or file the feet of all the guides, making each foot end in a smooth, rounded taper. Clean all the guide feet with alcohol.
7. Determine the guide spacing, using a table or the algebra trick described in chapter 4. If youâre unsure of the spacing, wrap the female ferrule, tape the guides to the blank with masking or electrical tape, and test the rod with both a static load and some casting out on the lawn. Make sure the load is spread along the blank. If you notice any sharp angles in the line during your tests, move the guides in that area closer together.
8. Measure and mark the final guide spacing. Starting at the tip, wrap the guides in place, checking each for alignment and stopping frequently to wash your hands. Pack and burnish the wraps as you finish each one. Rewrap the female ferrule if you took the rod outdoors for test-casting, add the wrap below the tip-top, and wrap the hook keeper.
9. Apply the finish. Remember to use thin coats. Try to expose the rod to as little dust as possible.

Once the finish has completely cured, you can go terrorize the fish. Most rod makers, though, like to add one final, personal touch to their new toys.

**INSCRIPTIONS AND SUCH**

Itâs a rare angler who doesnât want to put his name on a rod he built. And why not? You worked hard on your rod. Itâs unique in all the world, and youâre proud of it.

I guess Iâm one of the rare anglers, because I donât sign my rods. I used to, but I stopped for a couple of reasons. The first is pragmatic. Although marking many thousands of pages of magazine copy has given me neater-than-average printing, and even though I once studied calligraphy, I cannot write neatly on a rod blankâjust plain canât, no matter how much I practice. When I write on a rod, I add only ugliness to it.

The other reason is personal. I donât need to build monuments to myself. I donât put fancy labels on my fly boxes (âCustom tied by Art Scheckâ) or on the valve cover of my carâs engine (âCustom lubricated by Art Scheckâ) or on my shoes (âCustom polished by Art Scheckâ), and I donât see the point of putting them on my fishing rods.

But itâs handy to mark a rod with its specifications, particularly if you own several rods that look pretty much alike but carry different lines. And maybe you like to put your name on things; most people do.

You have several choices. For my money, the most elegant way to personalize a rod is to use a reel seat with a butt plate or cap that can be engraved by a jeweler or trophy shop. Obviously, space on a butt plate is limited; you wonât have room for inscriptions such as

Â

EIGHT FEET, SIX INCHES FIVE-WEIGHT LINE BUILT BY ART SCHECK IN MARCH 2001 HYPERHEAVE BLANK

Â

At best, a butt plate has space for initials and abbreviated specifications:

Â

8' 6"

#5 LINE

A.R.S.
Â

But whatâs wrong with that? That small inscription says all I need to know about a rod.

If you want to write on the blank, limit yourself to a short inscription, unless you have exceptional penmanship. Lettering a narrow stick is tricky; the more characters you try to put on a rod, the greater the likelihood that youâll make a mess of things. If your name is Ned Bly, put it on the rod. But if you were christened Zbigniew Alexander Malinovskovitch, use your initials. I can barely put my two-syllable name on a rod so itâs legible.

Work out the spacing of an inscription before you write on the blank. If you use your initials and abbreviate the rodâs specifications, you can fit the whole thing on one line:

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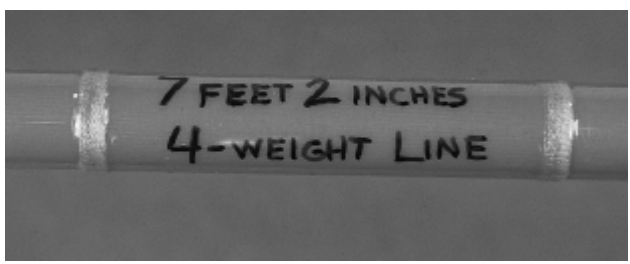



**On this fiberglass blank, I was able to use india ink to write the specs. A pair of trim bands frame the inscription, and several coats of varnish protect the wraps and lettering.**

---

8' 6" #5 LINE A.R.S.
Â

If you want to use your name, try an arrangement like one of these:

Â

8' 6" 5-WT. LINE
ART SCHECK

Â

8 FT., 6 IN. 5-WT. LINE

ARTHUR R. SCHECK

Â

See how theyâre balanced? Work out the spacing by printing the inscription several times on a piece of lined paper.

Brief inscriptionsâinitials and abbreviated specsâcan often be made between the hook-keeper wraps. If you botch the job, at least itâs in an inconspicuous spot. A longer lettering job is made on the blank above the hook keeper.

When I letter a blank, I like to frame the inscription with wraps. If the inscription is right above the hook keeper, I put a narrow wrap above it, and let the hook-keeper wrap serve as the lower frame. When I put an inscription farther up the blank, I make a trim band on each side of it. Framing an inscription saves me the trouble of having to feather the edges of the protective finish.

You have to break the glaze on a glossy blank before you can write on it. With fine steel wool or a synthetic scouring pad, lightly scuff the area on which you plan to write. You donât have to scratch up the blank; merely dulling the finish will do. Clean the area with rubbing alcohol before writing on it. After the inscription dries, a couple of coats of varnish or a coat of two-part finish will restore the gloss. A matte-finish blank requires no preparation.

**Abbreviated specifications can go between the hook-keeper wraps. These were made with acrylic craft paint and protected with one coat of finish.**

Some blanks have spiral ridges on them. Actually, all blanks start out that way, but most manufacturers sand off the ridges left by the manufacturing process. If you have a blank with ridges, donât try to write on it. If you want to personalize the rod, use a reel seat that can be engraved, or figure out some kind of label.

Youâll need an old-fashioned dip pen to write on a blank. The nearest art-supply store probably carries them. Get one with a fine-tipped nib; the good old Hunt Crowquill works well.

Years ago, when most blanks were made of fiberglass and had light finishes, rod makers used india ink to letter their rods. Once it has dried, india ink is unaffected by varnish or a mixed finish. But black india ink is hard to see on a dark gray or dark brown graphite blank. If you have a green blank, you might be able to use it.

Typewriter correction fluid makes opaque lettering on a dark blank, though itâs not the easiest stuff to use. Youâre lucky if you can finish one letter at a time before having to refill the nib of the pen. But correction fluid does a good job, and itâs certainly cheap enough. You can wipe off a botched inscription before it dries with a rag moistened with alcohol.

Use the little brush in the cap to apply the fluid to the nib. Or you can squeeze some correction fluid into a small dish (the cap of a 35mm film can, for instance), add a drop or two of thinner to make the liquid easier to use, and then dip your pen into it. Lettering with correction fluid is slow going, but Iâve used it on a few rods. None of the rod finishes Iâve used has made correction fluid smear or bleed, but that doesnât mean the stuff is impervious to every two-part finish. If you want to use correction fluid to write on your fly rod, make some practice lettering on the barrel of a disposable pen, and then coat the writing with your rod-wrapping finish to see what happens. Never use a rod you just finished building as a test site; you might end up with a permanent mess.

Iâve also used acrylic craft paints to write on rods. These come in a zillion colors, and youâll find them at the nearest craft store. They seem impervious to varnish, but I donât know what effect every brand of two-part finish might have on acrylic paints. Again, experiment with a practice inscription.

Model paints usually bleed or smear when you apply rod finish over them. So does nail polish. Avoid both.

Very fine-pointed permanent markers can be used to make inscriptions. I find a fine marker easier to write with than a steel dip pen. A markerâs ink, however, is not truly opaque; a red marker will not show up on a dark blank. On a blank light enough to let it show, black lettering works best. Most finishes will make marker ink smear or bleed, which means that you have to cover the inscription with a coat of water-based color preserver before applying the final finish.

Itâs a good idea to practice an inscription several times before attempting to put it on your rod. Writing on a narrow, curved surface is much harder (for me, anyway) than it looks. Stick a piece of Scotch brand Magic Transparent Tape (the kind you can write on) on the blank, and make your practice letters on that.

Iâve heard about rod makers making inscriptions on tape and then sticking the tape to the blank. Thatâs a good method if you handle the piece of tape with tweezers to avoid getting fingerprints on the sticky side, and if your rod finish will stick to the tape. Some finishes, notably varnish, tend to bead up on tape. Experimenting with practice lettering will tell you whether your finish will stick to tape.

No matter how you make it, protect an inscription with a couple of coats of varnish or one coat of two-part finish. If you frame the lettering with bands of thread, youâll need to give them the same treatment you gave the guide wraps.

**HOMEMADE LABELS**

A few years ago, I stumbled onto a solution to the lettering problem. If you own or have access to a good laser printer, you can use it to make excellent rod labels. This trick works only with a laser printer that employs dry toner; it wonât work with an ink-jet printer.

Most computers offer a variety of typefaces, which can be set in various sizes. Fancy word-processing programs and graphics software such as QuarkXPress let you make fine adjustments in the space between lines of type and the space between letters. With many computers, you can add a border to a label or even print âreversedâ or âknocked outâ

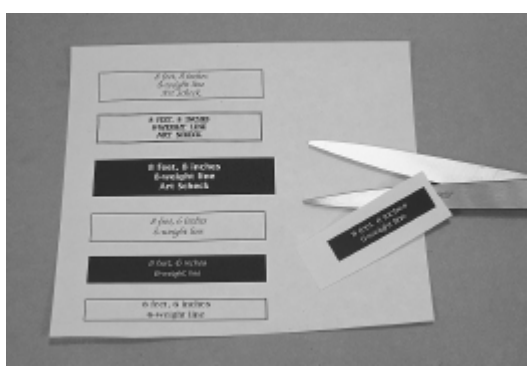
typeâwhite letters on a black background, that is.

After printing a label, trim it slightly oversized, leaving an extra 1/8 inch or so all the way around. Give the back (unprinted) side of the label a generous coat of water-based color preserver. The color preserver will penetrate and slightly soften the paper but will not affect the printing. While the goo is still wet, carefully press the label onto a piece of polyethylene plastic; I use an empty 35mm Fuji film canister. Wait a minute, and then paint the printed side of the label with color preserver. Set the thing aside to let it dry overnight.

After the color preserver has dried, peel the label off the polyethylene, to which the color preserver will not adhere. Trim the label to its finished size, making a broad point on each end. Roll the label between your fingertips to cup it so it will fit the curved surface of the rod blank. Lay the label on the blank; its smooth back surface will probably cling to the rod. If the label refuses to lie flat, give the back side a thin coat of rubber cement. Let the cement dry and stick the label to the blank.

Then make a wrap on each end of the label, binding it to the rod. You can use the upper hook-keeper wrap to secure one end of the label, or you can use a pair of trim bands to attach the label farther up the blank. Finish the thread as you did the guide wraps, and give the area between them a couple of coats of finish to protect the label. The color preserver in and on the paper will keep the finish from harming the printing.

---

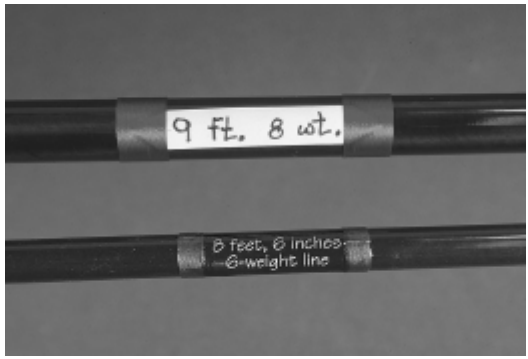


**1. You can use a laser printer (but not an ink-jet printer)**

**to make neat labels for your rods.**

**3. Let the color preserver dry, then peel the label off the film can. Trim it to size and make a blunt point on each end.**

**2. Print a label and cut it out. Paint the back side with color preserver, and stick the label to an empty plastic film can. Then paint the front of the label with color preserver.**




**4. Attach the label to the blank by wrapping a trim band on each end. Finish the label as you would a guide wrap. You can use the same color-preserver treatment for hand-lettered labels like the one at top.**

---

A neatly printed label adds a professional touch and lets those of us with execrable handwriting put specifications and our names on rods without doing any aesthetic damage. Itâs a good trick, and one thatâs available to most rod makers nowadays.

If you have good handwriting, you can make a hand-lettered label. With a fine-tipped permanent marker, write the inscription on good paper. Cut the label out and give it the same color-preserver treatment described above. After the color preserver dries, trim the label to shape and secure it to the blank with a wrap on each end.

**CARE AND FEEDING**

Most companies that sell rod-making supplies also sell rod bags and cases. Many rod makers like to get fancy screw-top aluminum tubes for their handmade rods. You can even buy exquisite wooden fly-rod cases guaranteed to dazzle the rubes.

But Iâd lose my title of Captain Cheap if I failed to point out that you can make serviceable rod tubes with PVC pipe and fittings from the hardware store. Plastic-pipe rod cases donât impress your friends, but neither do they yell âI contain something expensive! Steal me!â when you leave them in the

back of a vehicle, or if you entrust them to baggage handlers.

Make a rod tube with enough room to glue a piece of foam inside the bottom and the cap. The foam will cushion the ends of your fly rod, particularly the tip-top, if the case endures a fall or rough handling. Drill a few small holes in the tube to let condensation evaporate.

Clean your rod regularly. Dirt dulls the finish and increases friction between the line and the blank. I remember an old J. C. Higgins gun-cleaning kit that bore the motto, âA clean gun shoots straight.â A clean fly rod may not shoot any straighter, but it will shoot a little farther. And it looks a lot better than one encrusted with dried pond scum.

After the wrapping finish on your new rod has cured for at least a month, give the rod a coat of wax. Liquid car wax works fine, or you can buy one of the special rod waxes such as that sold by U-40. A coat of wax reduces friction between blank and line and makes a rod easier to clean. Obviously, you shouldnât wax a rod with a matte finish.

In many parts of the country, you canât go fishing without dousing yourself with insect repellent. Donât get bug repellent on your fly rods. Some repellents, particularly those that contain DEET, will damage or even dissolve the finish on a blank.

In time, your rodâs handle will become soiled. You can regard a grubby handle as something that adds character (âSee that bloodstain? That happened the day I caught that 30-pound striper.â) or you can clean your rodâs grip with 400-grit sandpaper. Treating a new handle with cork sealant will make it easier to clean later on; a soapy rag will remove most of the dirt.

You can protect metal reel seats and the metal parts of skeleton seats by wiping them down with a rag moistened with WD-40 or something similar. Wipe the metal with the oily rag, and then polish it with a dry rag, leaving only the thinnest coating of WD-40.

Store your extra guides and leftover thread in a safe place. Youâll know where to find them if you need to replace a damaged guide, and youâll be able to wrap it with the same thread you used when you built the rod. Save some cork dust in an empty film canister. You can repair minor damage to a

rod grip with a paste of wood glue and cork dust, just as you would fill a pit in a new handle.

Graphite and fiberglass ferrules donât wear much, but they do wear, mostly on the inside of the female parts. If you want to lubricate your ferrules, buy one of the special lubricants sold by rod-building and tackle companies, and use the stuff sparingly. Iâve tried paraffin and other waxes as ferrule lubes, but always with unhappy results. Wax, like oil, is a magnet for dirt. Few things are as disheartening as joining the sections of your handmade rod and hearing the horrible scraping sound made by a piece of grit inside the ferruleâexcept, perhaps, for pulling the ferrule apart and contemplating the long gouge in the male half. If you lubricate ferrules with paraffin, you will certainly hear that sound. Itâs not a bad idea to clean ferrules periodically. A cotton swab moistened with alcohol or lighter fluid will do the job.

Barring accidents, your new rod should last a long, long time. A little care and maintenance will keep it looking new for many years.

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this book started as a small projectâ64 pages, perhaps, with a few dozen photos. It grew, as books tend to do, and by the time I finished this chapter I had written something like 60,000 words and taken hundreds of photographs. But it has been fun. I hope youâve enjoyed reading this book as much as Iâve enjoyed making it.

And, above all, I hope youâve learned that rod building is an eminently reasonable craft. Thereâs nothing to be afraid of, no reason not to make your own fly rods, and no reason for your rods not to turn out least as good as those that have given me so much pleasure.

Have fun.

# APPENDIX A

## RETAIL ROD-BUILDING SUPPLIERS

The following companies are among those that sell blanks, components, and tools to retail customers. Some other companies, such as Glenn Struble Manufacturing, maker of premium reel seats, are happy to send you a brochure but sell products only to wholesale customers. You can find more supply houses by checking advertisements in magazines such as *American Angler*. Notes after some of the entries reflect my experience with those companies or my impression of their catalog.

Â

JANNâS NETCRAFT
P.O. BOX 89
MAUMEE, OH 43537-0089
(419) 868-8288
WWW.JANNSNETCRAFT.COM

Â

One of my favorite companies in the tackle business. Not as large a selection of blanks as some other houses, but a good assortment in a range of prices; the house-label Sportsmanâs Series blanks are particularly good values. A good variety of components at reasonable prices, including reel seat and handle kits. Superb customer service and an uncommonly helpful, easy-to-use catalog.

Â

ANGLERâS WORKSHOP
P.O. BOX 1910
WOODLAND, WA 98674
(360) 225-9445
WWW.ANGLERSWORKSHOP.COM

Â

A big catalog with a large assortment of fly-rod blanks, reel seats, and components in a range of prices. Offers a large variety of handle-and-seat kits and custom inletting of grips. Quite a few premium reel seats and handles.

Â

CABELAâS
ONE CABELA DRIVE
SIDNEY, NE 69160-9555
1-800-844-2267
WWW.CABELAS.COM

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Besides the big Master Catalog, Cabelaâs has a Tackle Craft catalog with rod-building and lure-making products, including a variety of kits.

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MUD HOLE CUSTOM TACKLE
P.O. BOX 99
GOLDENROD, FL 32733
(407) 678-1015
WWW.MUDHOLE.COM

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A large assortment of rod-building materials, and a better-than-average web site.

Â

E. HILLEâANGLERâS SUPPLY HOUSE
811 SOUTH MARKET STREET SOUTH
WILLIAMSPORT, PA 17702
(570) 323-7564
WWW.ANGLERSUPPLYHOUSE.COM

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BARLOWâS TACKLE SHOP
BOX 830369
RICHARDSON, TX 75083
(972) 231-5982
WWW.BARLOWSTACKLE.COM

Â

CUSTOM TACKLE SUPPLY
2559 HIGHWAY 41-A SOUTH
SHELBYVILLE, TN 37160
(931) 684-6164
WWW.CUSTOMTACKLE.COM

# APPENDIX B

## GUIDE-SPACING MATH

To save you a little time, Iâve prepared guide-spacing equations for a variety of fly rods. These are by no means all the possible equations, but each is based on what experience suggests is a correct number of guides and a safe distance between the tip-top and first guide.

In each equation, *d* is the distance from the tip-top to the stripping guide (or the lowermost guide, on a rod with more than one stripper). As we noted in chapter 4, the stripping guide generally goes 28 to 32 inches above the bottom of the reel seat; that 28- to 32-inch range does not include a fighting butt. On most fly rods for most adults, 30 or 31 inches is a safe measurement for the distance between the bottom of the reel seat and the stripping guide.

Hereâs the sequence of events. Install the reel seat and grip, and the fixed fighting butt if the rod has one. Mount the tip-top and tape the stripping guide in place, measuring from the bottom of the reel seat. Join the rodâs sections, and then measure from the tip-top to the stripping guide. That measurement becomes the quantity for *d* in the equation.

Letâs run through a short example. For a 6-foot rod with seven guides, the first of which is 3Â¾ inches below the tip-top, the guide-spacing equation is this:

d = 3.75 + (3.75 + x) + (3.75 + 2x) + (3.75 + 3x) + (3.75 + 4x) + (3.75 + 5x) + (3.75 + 6x).

Simple math lets us reduce that equation:

d = 26.25 + 21x.

Letâs say that the rodâs total length, with the reel seat and tip-top installed, is 72Â½ inches. (The tip-top adds a smidgen of length, and so does the butt cap of the reel seat.) We tape the stripping guide 29 inches above the bottom of the reel seat, a safe distance on this little rod. The distance from tip-top to stripping guideâ*d*, in our equationâis 43Â½ inches; a tape measure will provide the number. Now we can solve for *x*:

43.5 = 26.25 + 21x.

Or:

17.25 = 21x.

Or:

x = .821.

After another minute with the calculator, we know that:

2x = 1.642

3x = 2.463

4x = 3.284

5x = 4.105

6x = 4.926.

Now we can put those quantities into the original equation:

3.75 + (3.75 + .821) + (3.75 + 1.642) + (3.75 + 2.463) + (3.75 + 3.284) + (3.75 + 4.105) + (3.75 + 4.926).

Adding and rounding off to the nearest hundredth gives us the intervals between the guides:

3.75 + 4.57 + 5.39 + 6.21 + 7.03 + 7.86 + 8.68.

Keeping a running total gives us the distance of each guide from the tip-top, which we can then round off to the nearest 1/8 inch:

| Guide Number | Distance from Tip-Top | Nearest ⅛ Inch |
|---|---|---|
| 1 | 3.75 | 3¾ |
| 2 | 8.32 (3.75 + 4.57) | 8⅜ |
| 3 | 13.71 (8.32 + 5.39; and so on) | 13¾ |
| 4 | 19.92 | 20 |
| 5 | 26.95 | 27 |
| 6 | 34.81 | 34⅞ |
| 7 | 43.49 | 43½ |

And there we go: preliminary (and maybe final) guide spacing for that rod.

Follow the same process with any of the equations below, creating a quantity for each guide interval. For a 9-foot rod with 10 guides, for example, you need to solve for *x* and then calculate 2*x* through 9*x*.

In every case, once you place the stripping guide, you know the quantity for *d*. Then complete the math to find *x* and determine the intervals between the guides to create a guide-spacing table. After that, you might have to tinker a little with guidesâ locations, either to accommodate a ferrule or to tune the guide spacing to the blankâs action. Sometimes youâll get lucky, and your first set of calculations will yield acceptable guide-spacing measurements.

Here are equations for a variety of fly rods, grouped by length. Remember that *d* is always the distance from the tip-top to the lowermost guide.

A 6Â½-foot rod with seven guides, the first of which is 3Â¾ inches below the tip-top: d = 26.25 + 21x. Calculate x through 6x.
A 6Â½-foot rod with seven guides, the first of which is 4 inches below the tip-top: d = 28 + 21x. Calculate x through 6x.

A 7-foot rod with eight guides, the first of which is 3Â¾ inches below the tip-top: d = 30 + 28x. Calculate x through 7x.
A 7-foot rod with eight guides, the first of which is 4 inches below the tip-top: d = 32 + 28x. Calculate x through 7x.

A 7Â½-foot rod with eight guides, the first of which is 4 inches below the tip-top: d = 32 + 28x. Calculate x through 7x.
A 7Â½-foot rod with nine guides, the first of which is 4 inches below the tip-top: d = 36 + 36x. Calculate x through 8x.

An 8-foot rod with nine guides, the first of which is 4 inches below the tip-top: d = 36 + 36x. Calculate x through 8x.
An 8-foot rod with nine guides, the first of which is 4Â¼ inches below the tip-top: d = 38.25 + 36x. Calculate x through 8x.
An 8-foot rod with nine guides, the first of which is 4Â½ inches below the tip-top: d = 40.5 + 36x. Calculate x through 8x.

An 8Â½-foot rod with nine guides, the first of which is 4Â½ inches below the tip-top: d = 40.5 + 36x. Calculate x through 8x.
An 8Â½-foot rod with ten guides, the first of which is 4 inches below the tip-top: d = 40 + 45x. Calculate x

through 9x.

A 9-foot rod with ten guides, the first of which is 4 inches below the tip-top: d = 40 + 45x. Calculate x through 9x.
A 9-foot rod with ten guides, the first of which is 4Â¼ inches below the tip-top: d = 42.5 + 45x. Calculate x through 9x.
A 9-foot rod with ten guides, the first of which is 4Â½ inches below the tip-top: d = 45 + 45x. Calculate x through 9x.
A 9-foot rod with eleven guides, the first of which is 4Â½ inches below the tip-top: d = 49.5 + 55x.. Calculate x through 10x.

A 9Â½-foot rod with eleven guides, the first of which is 4Â½ inches below the tip-top: d = 49.5 + 55x. Calculate x through 10x.
A 9Â½-foot rod with twelve guides, the first of which is 4Â½ inches below the tip-top: d = 54 + 66x. Calculate x through 11x.

A 10-foot rod with eleven guides, the first of which is 4Â½ inches below the tip-top: d = 49.5 + 55x. Calculate x through 10x.
A 10-foot rod with twelve guides, the first of which is 4Â½ inches below the tip-top: d = 54 + 66x. Calculate x through 11x.

What about an unusual lengthâ7 feet, 9 inches, say? Donât worry about it. All you care about are the number of guides, the space between the tip-top and first guide, and the measurement from the tip-top to the stripping guide. On a 7-foot, 9-inch rod, you will probably want to use nine guides. Put the first one 4 inches below the tip-top. Place the stripping guide, and measure the distance from it to the tip-top (this becomes the value of *d*). Now use the equation above for a rod with nine guides, the first of which is 4 inches down from the tip-top: d = 36 + 36x. Do all the math, and youâll have a guide-spacing table.

Thatâs the cool thing about this algebra stuff: It will work for any rod blank.

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**Art Scheck** is the editor of *Saltwater Fly Fishing* magazine and a columnist for *Fly Tyer*. A former editor of *Fly Tyer* and American *Angler magazines*, he has written dozens of articles on fly fishing and fly tying for these and other periodicals.